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CHAPTER 3.0 NURSE STAFFING IN U.S. NURSING HOMES[1]

3.1 Introduction

The purpose of this background chapter is to provide an updated portrait of nursing home staffing and examine three policy related issues in light of these staffing levels. To this end, the chapter is divided into four major sections. The first section provides a very general overview of how nursing home nurse staffing in other countries compares to the United States. The reported U.S. staffing levels in this overview are from published literature and there is no attempt to assess the adequacy of the data sources utilized and possibly more accurate alternatives. The second section focuses exclusively on the U.S. and offers an assessment of the three data sources that can provide national estimates of staffing in the United States. All three are found to have limitations, the most serious is that the staffing levels are all self-reported by the facilities themselves and their accuracy is unknown. Nevertheless, in Chapter 7 we have assessed the validity of the OSCAR data and have developed a number of decision rules for arraying the data to improve its reliability. Applying these decisions rules permits the construction of an improved, more accurate OSCAR file for the third section of this chapter: an examination of the current levels and trends of nursing home staffing throughout the United States.

The fourth section examines three policy-related issues in light of the staffing levels presented in the previous section. First, we simulate with these data how many facilities would be affected if the proposed standard recommended by a conference of experts were to be adopted. The conference was convened in April 1998 by the John A. Hartford Institute for Geriatric Nursing, Division of Nursing, at New York (Harrington et. al., 2000).[2] We also examine how much these affected facilities would have to increase their nurse staffing to meet this proposed standard. Second, we examine whether some facilities might *decrease* staffing in response to a minimum staffing standard, empirically

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[1] The bulk of this chapter, section 3.4 with the description of nurse staffing, was completed for the Health Care Financing Administration (Contract #500-95-0062-T.O.3) by Alan White of Abt Associates. Abt thanks Elaine Lew and Ed Mortimore, both of HCFA, who shared data and SAS programs with Abt for these analyses. The research depended on 1998 OSCAR data generously provide by Mick Cowles, of Cowles Research Group. In addition, Abt gratefully acknowledges the assistance of Christine Kovner, New York University School of Nursing and Andy Kramer, Center on Aging and Division of Geriatric Medicine, University of Colorado Health Sciences Center. Marvin Feuerberg, HCFA Project Officer, developed the analysis plan for this chapter and wrote several subsections throughout the chapter. The international comparison in section 3.2 was written by Elaine Lew and edited by Jeane Nitsch, both of HCFA. The assessment of data sources, section 3.3, was prepared by Judy Sangl, Agency for Health Care Research and Quality (AHRQ). Editorial assistance provided by Ed Mortimore and Susan Joslin, HCFA.

[2] The Hartford proposal built upon a prior and widely disseminated minimum staffing standards proposed by the National Citizens Coalition for Nursing Home Reform (NCCNHR).

testing the often claimed assumption underlying the opposition to setting or raising minimum staffing requirements. Specifically, we test whether minimum staffing requirements have the unintended consequence of reducing the staffing levels in otherwise better staffed nursing homes, or whether, in short, raising the floor lowers the ceiling. Finally, there is an examination of whether the nursing homes under chain ownership, particularly bankrupt chains, may have reduced their staffing levels in response to their financial vulnerability.

3.2 Nursing Home Nurse Staffing in Other Countries

3.2.1 Diversity of Policies and Approaches

To understand the differences in nurse staffing among foreign countries, one must realize that each country has a unique system for long-term care. Several factors contribute to this diversity. Some countries have held the elderly population in high regard and have viewed the care of the aged population as a priority. Other countries have moved away from institutionalized care in nursing homes and hospitals and have placed a greater emphasis on home care. The payment of health services by private insurers and individuals rather than by the government has also given rise to more varied long-term care structures.

All of these differences in long-term care add to the difficulty in contrasting nurse staffing among countries. Few researchers in the United States have studied staffing in nursing homes outside the U.S., much less analyzed the relationship between staffing and the quality of care of the residents. Most compatible studies are dated, and their present day applicability is questionable. Adding to the problem of evaluating long-term care abroad is the fact that not only do nursing home services differ from country to country, but each area has a unique definition for a nurse's role and education level. Taking these factors into consideration, the following literature review examines the qualitative and quantitative features of nurse staffing.

Holding true for all countries, pressures on the labor force from the government and the industry can ultimately have an impact on nurse staffing. Denmark[3], for example, bases many of its social policies on the notion of guarding an individual's right to benefits and services. Encouraging workers to hold the same ideals, this principle sustains a high level of market participation in the health care and social

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[3] Royal Commission on Long Term Care. (1999) *With Respect to Old Age: Long Term Care Rights and Responsibilities*. London: Stationary Office(Cm 4192-1).

services industries, which, in turn, sustains the tax base that finances these programs and increases investment in services for the elderly.

In Australia[4], new funding arrangements have attracted qualified nurse staff to long-term care. However, many nursing homes have eliminated nursing positions and increased the proportion of unlicensed workers, since they are cheaper and more flexible and their scope of practice is unlimited due to the lack of regulatory oversight. A national push has sought to develop competencies and an educational framework that encourages career progression by, for example, funding studies and workshops to detect and investigate problems in these areas. Reforms have reportedly resulted in improvement in the quality of life in residents in the past 14 years.

Similarly, staffing has troubled Great Britain. Nazarko[5] reports that because nursing homes are under-funded, continuously understaffed, and have inappropriate skills-mix, the quality of care of the residents has been compromised. Reports have shown that even non-profit homes are reducing the number of registered nurses to balance their budgets. Nurses view nursing homes as places with unrewarding, backbreaking workloads and little job satisfaction. The worst homes do not offer job security or prospects for promotion. Staff members are also wary that profits will be prioritized over patient care. In addition, Smith and Seccombe[6] have reported that there is an increasing shortage of fully trained nurses.

3.2.2 Nurse Staffing Levels

Besides working through the labor force, some governments have implemented regulations that establish staffing standards in long-term care. In a geriatric health facility in Japan[7] (the equivalent to an American skilled nursing facility), it is required that eight nurses and 20 nurse aides be present per 100

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4 Nay, R., Garratt, S., & Koch, S. (1999). Challenges for Australian nursing in the International Year of Older Persons. *Geriatric Nursing*, 20(1), 14-17.

5 Nazarko, L. (June 1997) Staffing the homes. *Nursing Management*, 4(3), 22-23.

6 Smith, G. & Seccombe, I. (1998) *Changing times: a survey of registered nurses in 1998*. London: Institute for Employment Studies. In Bowman, C. et al. Geriatric care in the United Kingdom: aligning services to needs. *British Medical Journal*. 319:1119-1122, 1999.

7 Maeda, Nobuo. (1989). Long-term care for the elderly in japan. In T. Schwab (Ed.), *Caring for an aging world: International models for long-term care, financing, and delivery* (pp. 254-255). New York: McGraw-Hill Information Services Co.

beds. Great Britain's *A Better Home Life*[8] and *Fit for the Future? National Required Standards for Residential and Nursing Homes for Older People*[9] have provided residential and nursing home inspectors and providers guidance in determining the sufficiency of nurse staffing.

Nurse staffing standards include:

- Homes must employ an adequate number of qualified and competent staff who have the right balance of skills and experience to meet the needs of residents.
- The National Association of Health Authorities and Trusts' handbook is used by the registration authority to determine staff-mix and levels, since the needs and circumstances of the residents differ from home to home.
- A "first-level nurse" should be on duty throughout the day.
- There must be a minimum of two care staff on duty at all times by day and by night.
- Staff to resident ratios must be as follows:
  1:5 in the day, 1:7 in the evening, and 1:10 at night (minimum 2 awake).
- Additional staff must be on duty at peak times of activity.
- Apart from the person in charge--who must be a first-level RN--a third of staff must be registered nurses. Of the remaining care staff, there must be a minimum of 50% qualified members of staff to 50% unqualified by the year 2005.
- Ancillary staff members must be calculated on the basis of the following:
  3.5 hours per resident per week for laundry and domestic staff;
  2.5 hours per resident per week for catering staff.
- The nursing home owner must be able to provide sufficient evidence that the right level of staffing with appropriate competency and training will be provided.

In addition to examining the socioeconomic atmosphere and national policies concerning nurse staffing, it is important to consider how the staff delivers care to the residents. Evans [10], in a tour of long-term care facilities in four European countries, found some interesting features in Swedish nursing homes,

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[8] Center for Policy on Aging. (1996). *A better home life: A code of good practice for residential and nursing home care*. London.

[9] Department of Health. (1999). *Fit for the future? National required standards for residential and nursing homes for older people*. London.

[10] Evans, L.K. (1997) Trends in aging care in Scotland and Scandinavia. *Journal of Gerontological Nursing*, 23(9), 32-36.

which house primarily physically-impaired residents[11]. Finding Swedish nursing homes to have a homelike environment, Evans observed that the resident's preferences is prioritized in all aspects of daily living, for the staff pay attention to each resident's habits and desires.

In the Netherlands, Ribbe[12] describes nursing homes as centered more on the patients' total functioning and well-being, rather than being primarily disease-focused. Table 3.1 shows that in addition to nurses, nurse aides, and physicians on staff, the paramedic staff is valued just as well in a Dutch nursing home and helps ensure healthy aging and an adequate living environment for residents.

Table 3.1. Staff per 100 Occupied Beds in Dutch Nursing Homes in 1986 (Absolute Numbers)[13,14].

	Nursing homes for the physically-impaired	Psychogeriatric nursing homes	Mixed nursing homes
Total staff[15]	114	108	114
Total nursing staff[16]	73	73	75
Total paramedic staff[17]	8	8	9

Mean nurse staffing for all nursing homes: 74

[11] Because of the idea of placing the elderly with the mentally impaired violates good care and humanity, old-age homes, which can be equated to U.S. nursing facilities, and psychogeriatric facilities were made distinct and separate. In the U.S., a large number of nursing home residents have mental disorders.

[12] Ribbe, M.W. (1993) Care for the elderly: the role of the nursing home in the Dutch health care system. *International Psychogeriatrics*, 5(2), 213-222.

[13] Assuming the mean 74 staff members refers to full time equivalents (FTEs) and an FTE is equal to 40 hours per week, the reported staffing for 100 occupied beds, as indicated in the table, converts to 4.23 nursing hours per resident day (and 3.7 hours per resident day is an FTE equal to 35 hours per week).

[14] Ribbe, M.W. Care for the elderly: the role of the nursing home in the Dutch health care system. *International Psychogeriatrics*. 5(2): 213-222, 1993.

[15] Includes nurses, nurses-in-training, nurse aides, paramedical staff, and physicians.

[16] Includes nurses, nurses-in-training, and nurse aides.

[17] Includes physiotherapists, occupational therapists, speech therapists, activity/recreational therapists, psychologists, dieticians, and social workers.

In comparison, Swiss nursing homes have a different mix of staff members. As reported in an informal correspondence with Dr. Alfred J. Gebert[18] from the Association for Quality Assurance in Health, the following statistics reflect the average FTEs per 140 residents:

Physician		0.70
Aide to physician and in charge of medication	1.45	
Physiotherapist	1.05	
Ergotherapist		2.40
RN		35.39
LPN		26.11
Certified Aide		11.00
Aide		18.08
Administration	4.80	
Cleaning		10.74
Kitchen		12.59
Laundry		4.07
Cafeteria		3.69
Technical services (caretaker)	2.80	
Total		134.87

Assuming that an FTE is 42 hours per week, total nursing care hours are 3.9 hours per resident per day (hprd), with the following distribution:

RN	1.52 hprd
LPN	1.12 hprd
Certified Aide	0.47 hprd
Aide	0.77 hprd

According to Dr. Gebert, a Swiss health policy expert, nurses in Switzerland have a significant amount of training- RNs undergo four years of education, LPNs go through three years, registered aides go through one year, and nurse aides go through four weeks. In contrast, 58% of the RNs in the United States do not have a 4-year degree and nurse aides are required to have only 75 hours of training.

In addition to the Netherlands, we have found one study that compared the nurse staffing levels of several European countries. In general, it appears that these countries have more staff in nursing homes

[18] A.J. Gebert, (personal communication, December 30, 1999).

compared to the United States. With a focus on resource allocation and Resource Utilization Groups version III (RUG-III) in nursing homes, Carpenter et al.[19] conducted a study of the relationship between direct care time and patient characteristics in Sweden, the United States, Japan, Spain, and Britain. Table 3.2 includes data from this study.

Table 3.2. Direct care time in nursing home residents across five countries[20].

	Japan	Sweden	England and Wales	Spain	United States[21]
Total number of cases	873	405	1120	822	7648
Average nursing time in minutes per patient per case (Standard Deviation)	84.4 (49.6)	133.7 (78.9)	155.5 (85.8)	127.3 (78.3)	118.3 (68.5)

3.2.3 Conclusion: Nursing Home Nurse Staffing in Other Countries

From the limited information reviewed above, it is difficult to derive exact staffing comparisons between the U.S. and other countries. The research reviewed was conducted on different long-term care systems and based on different definitions of nursing categories, FTEs, and training. In addition, staffing was not the main focus of most of the articles. Although exact comparisons are not possible, a pattern emerges with respect to *relative* differences: nursing homes in the U.S. staff at much lower levels than in the other countries. In addition, the distribution of nursing hours in other countries is toward higher

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[19] Carpenter, G.I., Ikegami, N., Ljunggren, G., Carrillo, E., & Fries, B. (1997) RUG-III and resource allocation: comparing the relationship of direct care time with patient characteristics in five countries. *Age and Ageing*, 26-S, 61-65.

[20] Ibid.

[21] We assume from the number of reported cases (7648) that the nursing time reported here is derived from HCFA's 1990 Staff Time Measurement(STM) studies (see Chapter 13). These staff times appear quite differently from subsequent STM studies conducted by HCFA in 1995 and 1997 (see Chapter 13, Table 13.2), which report total mean resident specific time of 149 minutes (and 250 minutes of combined resident specific and nonspecific resident staff time) per resident day. We are not sure what accounts for these different estimates. The table from which this table was derived does not explicitly label the staff time as "direct care time," although this would seem to be a reasonable inference given the title of the article and the reported levels would be extremely low if they referred to total nursing time. Another possible reason for the different time estimates is that the 1995 and 1997 studies placed an emphasis upon selecting facilities and units within facilities that had high Medicare volume and provided a high percentage of rehabilitative care. The selection of these facilities and units increases the reported staff times. Finally, a variety of adjustments to the reported times may have been made in order to develop a "clinically smoothed" set of RUG categories and time estimates.

skilled staff (e.g., registered nurses) than is typically found in the U.S. where about 60% of total nursing hours are provided by the least skilled staff (i.e., nurse aides), as will be shown later in this chapter.

3.3 General Assessment of National Nurse Staffing Data Sources

3.3.1 Introduction

There are three sources of uniform national data on nurse staffing in nursing homes.[22] Two of these sources are national sample surveys, neither of which was designed to provide State-level estimates. The third source is data from the Health Care Financing Administration's (HCFA) On-Line Survey, Certification and Reporting (OSCAR) system which is an administrative database for all health care providers certified under the Medicare and Medicaid programs. In addition to standard descriptive information for all providers, OSCAR contains information from the State surveys of all certified nursing facilities. Each of these three sources has employed somewhat different definitions of a facility, staffing and resident counts and used different data collection procedures. On this basis alone, one would expect some differences in computed nursing hours per resident day. In the following sections there is a description of each of the data sources, attached documentation on staffing questions, and a summary of limitations .

3.3.2 Medical Expenditure Panel Survey (MEPS)

The first sample survey is the 1996 Nursing Home Component (NHC) of the Medical Expenditure Panel Survey (MEPS) which is a national, year long, panel survey of nursing homes and their residents. It is part of a series of surveys sponsored by the Agency for Healthcare Research and Quality (formerly Agency for Health Care Policy and Research) to collect information on health care utilization and expenditures. In addition to providing an estimate of use, expenses and sources of payment for nursing home services and health care for nursing home residents, the MEPS/NHC survey permits estimates for nursing home facilities of: services routinely provided, staffing, numbers of beds and residents and facility structure, type of ownership, expenses and revenue. A nursing home was defined as: a facility or a distinct part of a facility certified by Medicare or Medicaid or licensed as a nursing home with three or more beds that provides onsite supervision by an RN or LPN 24 hours a day (Potter, 1998). The

[22] Medicaid cost reports provide nursing home nurse staffing data for Medicaid-certified nursing homes. Unfortunately, these data do not provide staffing information for Medicare-only facilities. More importantly, the reported data use different definitions and do not provide uniform data across the States. However, in some respects the staffing data are superior. See Chapter 8 for an analysis of these data.

survey used a stratified two-stage systematic sample in which the first stage was for selecting facilities and the second stage was for selection of persons in the facilities (Potter, 1998).

A screener/recruitment round was conducted by telephone with scripted materials to: (1) verify the facility's name and address; (2) eliminate facilities that were definitely ineligible; and (3) recruit their participation and schedule an appointment for Round 1. Advance letters were sent to nursing homes prior to this screener round. In the first Round, an interviewer visited the facility to administer the Facility Questionnaire using Computer Assisted Person Interview (CAPI) technology, distribute and collect the paper copy of the Round 1 Self-Administered Questionnaire (SAQ) and collect the facility's printed rate schedule. The SAQ is given to the facility administrator (or designee) during the administration of the Round 1 Facility Questionnaire. The SAQ collects information that a pretest demonstrated could not be easily collected by in-person interviewing such as staffing information (Potter, 1998). After the SAQ was shown to the respondent, the interviewer would indicate if: (1) the SAQ was completed; (2) the SAQ was left with the respondent to pick up later in the interview day; (3) appointment was made for phone follow up for completion if it could not be completed that same interview day; or (4) it was referred to someone else for completion. A SAQ with staffing data is also administered in Round 3. The interviewer had to determine the status of the SAQ before leaving the facility; the survey data processing contractor would not accept any nursing home interview if the SAQ status item was not completed (Potter, 2000).

In the 1996 MEPS/NHC, nursing home staffing (RN, LPN and aides) is counted for the second full week in the January 1996 and the second full week in December. For MEPS the respondent is asked to record the number of FTE and part-time nurses for both employees and contract nursing staff hired by the nursing home from an agency. No distinction is made for administrative nurses. They would be included in the count. Full time is defined as at least 35 hours per week while part time is less than 35 hours per week. The Round 3 instrument also collects information on the staff hired during the time period January 1 and December 31, 1996. The questionnaire gives further clarification on work week definition and that the staffing questions are only for certified or licensed nursing facility beds. There are no instructions for calculating FTE employees.

The response rate for the Round 1 facility questionnaire was 85%; of those, 91% completed the Round 1 SAQ, yielding a round 1 response rate of 77%. The response rate for the Round 3 SAQ was 66% (Potter, 2000).

The 1996 MEPS/NHC also collected data on nursing home residents as of: January 1, 1996, and the night prior to the Round 1 interview, for those admitted during the year, those discharged during the year, and who used a nursing home any time during the year. It is possible to make estimates for the

number of admissions to the nursing home and the number of discharges from the nursing home. A public use file (PUF) on the MEPS nursing home data has been released and data have been published on residents and some facility characteristics. However, as of April 2000, there has been nothing published on staffing and it is not included in the PUF released to date.

3.3.3 National Nursing Home Survey (NNHS)

The 1997 National Nursing Home Survey is the fifth in a series of nursing home surveys sponsored by the National Center for Health Statistics. For the purposes of the 1997 NNHS, a nursing home was defined as a facility with three or more beds that routinely provide nursing care services. The facility could be certified by Medicare or Medicaid, or not certified but licensed by the State as a nursing home. The NNHS used a stratified two-stage probability sample design (Gabrel, 2000).

A letter was sent to the sampled nursing home informing them of the purpose and content of the survey. The letter was followed by a phone call within 10 days to discuss the survey and make an appointment with the administrator or designee for an in-person interview by a Census interviewer. The survey consists of a facility, a current resident and a discharged resident questionnaires. The overall response rate for the survey was 94.5 percent.

The facility questionnaire requests separate FTE employee information on staff, including RN, LPN and licensed vocational nurses (LVN), nurse aides and orderlies. A flashcard with 12 specific categories of employees (plus other category) is given to the person being interviewed. The Census interviewers are instructed to allow each facility to use its own definition of the number of hours they consider as full-time to reduce respondent burden (Sirrocco, 2000). If the respondent cannot provide FTE information, the interviewer collects information on the number of full time and part time employees for each category. They do not ask about temporary pool employees. There were no separate instructions regarding administrative nurses. The reference period for staffing data is the day of the interview (Sirrocco, 2000).

The survey asks for the total number of current residents on the rolls of the facility as of midnight of the day prior to the interview. This question is preceded by a question on the total number of currently available beds for residents, whether or not they are in use at the present. Discharges are defined as residents who were discharged from the facility during a designated month between October 1996 and September 1997. Deaths were included as part of discharges.

Facility data on staffing, current residents and discharges are reported in the overview of the 1997 NNHS (Gabrel, 2000).

3.3.4 On-Line Survey, Certification and Reporting (OSCAR) System

If a nursing home facility wishes to be certified for the Medicare and Medicaid programs, it must have an initial survey and periodic surveys thereafter to establish that it complies with all Federal regulatory requirements. On average, nursing homes are surveyed every twelve months but not less often than every 15 months. The surveys are conducted by State agencies under contract with HCFA. In 1997, about 4% of all nursing home facilities and less than 3% of all beds were not certified by either the Medicare or Medicaid programs (Gabrel, 2000). The OSCAR system contains three types of information for all certified nursing homes: (1) provider information, including facility characteristics and staffing data; (2) health survey information such as facility-level summary information regarding resident characteristics; and (3) survey deficiencies. Harrington et al (1999) reports that OSCAR data are collected in 2 different ways. First, the nursing home completes a standardized form on facility and resident characteristics and staffing levels at the beginning of each survey, and certifies that the information provided is accurate. Then, as part of the survey process, the State surveyors check the data provided by comparing the facility report with residents' and staffing records and observations of residents. After this review, the surveyor staff enter this data from the written forms into the computerized OSCAR system. Second, the surveyors make decisions about whether the facility has met a series of standards; if a facility does not meet a particular standard, the surveyor reports a deficiency; i.e., the standard was not met. These decisions are also entered into the OSCAR system.

The Long Term Care Facility Application for Medicare and Medicaid (HCFA-671) is the form used to collect the information for the OSCAR system. HCFA regulations require nursing facilities to meet minimum staffing standards. However, waivers may be granted under certain conditions where there is a personnel shortage and where there is no threat to the health and safety of residents. The form asks if the facility has a staffing waiver either for the seven day RN requirement or the 24-hour licensed nursing requirement. If there is a waiver, the facility is asked the number of hours waived per week.[23]

As part of facility staffing information, the form requests data on seven categories of nursing services: a) RN Director of Nurses, b) nurses with administrative duties, c) RNs, d) LPNs/LVNs, e) certified nurse aides, f) nurse aides in training, and g) medication aids/technicians. The form asks for the specific number of hours worked providing these services by full time, part time and contract staff separately. The reference period is for the most recent complete pay period (if longer than two weeks, the period

[23] As was noted in Chapter 2, current HCFA staffing regulations permit the granting of waiver to nurse staffing requirements; however, hardly any are in fact granted.

is the last 14 days). If individuals provide service in more than one category, the instructions say to separate out hours performed in each service. Full time is defined as 35 or more hours worked per week and part time is anything less than 35 hours per week. Contract staff are defined both as individuals under contract and organizations under contract (an agency to provide nurses).

Similarly, data on the numbers of residents are captured on form HCFA-672 (Resident Census and Conditions of Residents). It is important to note that there are also ambiguities on this form that may lead to undercounting or overcounting residents. Specifically, the facility is asked to report the "total number of residents in certified beds for whom a bed is maintained, on the day the survey begins." This count explicitly includes residents who are temporarily in the hospital or away from the facility but are expected to return.

The State survey staff enter the data for each nursing home survey within 45 days of the survey. There are only a very limited number of "front-end edit" checks to identify entry errors. In addition, HCFA regional offices conduct reviews of their OSCAR data from each State survey.

3.3.5 Summary: National Data Sources for Nurse Staffing

All three of the nurse staffing data sources use slightly different definitions of nursing homes, different data collection procedures, different reference periods, and collect different data on nursing home staff. They also use different definitions for resident counts - a difference which impacts the key variable in this entire study, the number of hours (or FTEs) *per resident day*. In a sense, a nursing home's total reported nurse staffing is not helpful unless we also know how many residents, and their acuity levels, are provided care by these staff. Both the 1996 MEPS and 1997 NNHS nursing home data on nurse staffing are self-report, although the first is primarily self-administered and the latter is administered by in-person interview. FTE hours are clearly defined in MEPS but defined by each facility in the NNHS. Most importantly, none of the staffing data provided are independently validated against another source such as payroll records.

With the OSCAR staffing data, however, there would appear to be a possibility of some checks of the State surveyor with records available at the facility at the time of the survey. In addition, the OSCAR data are essentially an ongoing census of the 95% of nursing homes that are certified. As such, State-level staffing estimates can be generated. These State-level estimates are not possible with the sample surveys of the MEPS and the NNHS. Hence, we have employed the OSCAR data for the analysis of nurse staffing in U.S. nursing homes, described in the following sections of this chapter. We have recognized, however, the limitations of the OSCAR data that are addressed below and in Chapter 7.

3.4 Trends and Current Staffing in U.S. Nursing Homes: 1996-1999

A primary purpose of this section is to understand the impact of potential minimum staffing requirements. Understanding the impact of alternative staffing requirements requires analysis of mean staffing levels in U.S. nursing homes (overall, stratified based on facility characteristics, and by State), and how these staffing levels have changed over time, but, more importantly, requires analysis of the *distribution* of staffing across facilities, which is emphasized in these analyses.

3.4.1 Data Sources

The Health Care Financing Administration's Online Survey Certification and Reporting System (OSCAR) database contains information on every nursing home in the United States that is certified by Medicare and/or Medicaid. The data source and the decision rules used to determine which facilities to exclude from the analyses are described in Chapter 7. These decision rules resulted in the exclusion from these analyses of facilities that report: zero residents; more than 12 hours or less than an 0.5 hours per resident day; more total residents than total beds; zero RN hours and more than 60 beds; and large changes in staffing or resident levels across time.

National OSCAR data for 1996-1999 were used in the descriptive analysis, though data for 1999 included only assessments through June 30, 1999, as these were the only 1999 data available at the time that our analytic file was created. The sample included data for 18,861 facilities, with the following number of facilities in each year:

- 1996: 16,208
- 1997: 16,107
- 1998: 15,354
- 1999: 8,142

After applying the exclusion criteria, the number of facilities (and percent of original sample) included in the sample was:

- 1996: 14,335 (88.4%)
- 1997: 13,598 (84.4%)
- 1998: 13,005 (84.7%)
- 1999: 7,019 (86.2%)

3.4.2 Staffing Levels in U.S. Nursing Homes: 1996-1999

Change in staffing levels across time. Mean staffing levels were relatively constant between 1996 and 1999. Total hours per resident day (excluding Directors of Nursing) increased from 3.18 to 3.25 between 1996 and 1997 (an increase of about 2.2%), but there was little change between 1997 and 1999 (Figure 3.1, also see Appendix B1, Table B.1a). The overall distribution of staffing by category was also relatively constant during this period[24].

- Average RN hours per resident day increased from 0.48 to 0.53, accounting for about 50% of the 1996-1997 increase in total hours per resident day, and changed very little between 1997-1999.

- LPN hours remained constant across the study period, ranging from a low of 0.71 hours per resident day in 1996 to 0.72 hours for 1999.

- There was little change in nurse aide hours, which were between 1.99 and 2.01 hours per resident day across all four years.

Distribution of staffing levels. For purposes of understanding the potential impact of minimum staffing requirements, it is important to focus on the distribution of staffing across facilities rather than on mean staffing levels. Because the distribution of staffing, like the mean, was stable across time, we present analyses of the distribution of staffing for 1998, the most recent complete year for which OSCAR data were available.

- Total hours per resident day followed a normal (i.e., bell-shaped) distribution, with a long tail reflecting the small number of facilities with very high staffing levels (Figure 3.2 and Appendix B.3a). Rounding to the nearest .05 hours per resident day, the most

[24] Note than RN Director of Nursing hours are not included in these figures, but this information is included in Appendix B, which includes additional detail on changes in staffing levels across time. Mean RN Director of Nursing hours was 0.11 for all four years. Although nurse staffing levels have been relatively constant over the recent period, it has increased substantially if a longer period is examined. OSCAR staffing data is not readily available from the 1980s, but the 1985 and 1997 National Nursing Home Survey provides estimates for a much longer period. From the 1985 data, we have calculated the RN, LPN, and Aide FTEs per 100 residents as 5.6, 8.0, and 33.6, respectively. In 1997, the rates were 8.8, 11.9, and 38.3 respectively. This means that over a 13 year period, the RN rate has increased 57% and the LPN rate has increased 49 percent. In contrast, the Aide rate increased a much lower 14% - not surprising, given that the OBRA regulations implemented in October of 1990 provided minimum requirements for licensed staff. Of course, these figures do not take into consideration possible changes in acuity and occupancy rates which are much lower now.

common level of total hours per resident day was 2.8 hours (448 facilities, or 3.4%); 68% of facilities had between 2.25 and 4 hours. There were very few facilities with fewer than 1.5 or more than 4.5 total hours per resident day.

- There was less variance across facilities in RN hours per resident day (Figure 3.3 and Appendix B.3b). Twenty-four percent of facilities had between 0.2 and 0.3 RN hours. Fewer than 20% of facilities had more than 0.6 RN hours, and only 10% of facilities used more than 1 RN hour per resident day.

- The most common values of total RN+LPN hours were 0.80 and 0.85, and 75% of facilities used between 0.6 and 1.3 RN+LPN hours (Figure 3.4, Appendix B.3c). This distribution had a long tail, as 10% of facilities had more than 2.0 hours, including a small number that had more than 5.0 RN+LPN hours.

- Nurses aide hours followed an approximately normal distribution, with a small spike at zero, and a long tail for the small number of facilities that used more than 4 nurses aide hours per resident day (Figure 3.5, Appendix B.3d). Nearly 40% of facilities had nurses aide staffing levels in the 1.7 to 2.15 range, and only 10% of facilities reported fewer than 1.25 nurses aide hours. More than 6% of facilities used more than 3 nurses aide hours per resident day.

Staffing levels for hospital-based and freestanding facilities. Mean staffing levels were much higher at hospital-based facilities than at freestanding facilities. In 1998, for example, mean total hours per resident day were 5.36 at hospital-based facilities compared to 2.95 for free-standing facilities (Figure 3.6). A similar difference was observed for 1999. Staffing levels for each labor category were considerably higher at hospital-based facilities, but the differences were especially large for RNs:

- In 1999, mean RN hours per resident day were nearly 4 times higher in hospital-based facilities (1.68 hours compared to 0.35 hours).

- LPN hours per resident day were nearly twice as high at hospital-based facilities (1.26 hours for 1999) than at freestanding nursing homes, which averaged 0.65 LPN hours in 1999.

- Nurses aide hours were about 25% higher in hospital-based facilities.

Separate from the much higher mean staffing levels for hospital-based facilities, the distribution of staffing was quite different for the two types of facilities. Reflecting the fact that 87% of facilities were freestanding, the distribution of total hours per resident day for freestanding facilities (Figure 3.7) was quite similar to the distribution across all facilities shown in Figure 3.2. There was a great deal of variance in staffing levels for hospital-based facilities (Figure 3.8). The most common level was in the 3.15 to 3.55 range, but more than 50% of facilities reported more than 5 hours per resident day, and more than 10% used more than 8 hours per resident day. Almost no freestanding facilities reported staffing levels this high.

Mean staffing levels for non-profit, for-profit and government facilities. Mean staffing levels were consistently higher for non-profit facilities than either for-profit or government-owned facilities. For example, in 1998, mean total hours per resident day were 3.88 at non-profit facilities compared to 3.79 at governmental facilities, and 2.93 across for-profit facilities (Figure 3.9).

Staffing levels for all three staff types were higher in non-profit than in for-profit facilities, but the difference in use of RNs was especially large. In both 1998 and 1999, mean RN hours per resident day were more than twice as high at non-profit facilities than at for-profits. LPN hours were 0.14 (about 15%) lower among for-profits than at non-profits. Nurses aide hours were very similar for non-profit and government facilities, and were about 20% higher at these facilities than at for-profit facilities.

Mean staffing levels based on proportion of Medicare resident. Staffing levels were much higher for facilities with at least 15% Medicare residents than for facilities with a lower proportion of Medicare residents. In 1998, total hours per resident day increased from 2.83 - 3.00 for facilities with less than 15% Medicare residents to 4.81 for facilities with more than 15% Medicare residents (Figure 3.10). Much of the difference was due to the greater use of RNs at facilities with at least 15% Medicare residents. In 1999, mean RN hours were 1.37 in these facilities, compared to 0.32 to 0.37 for facilities with lower percentages of Medicare residents.

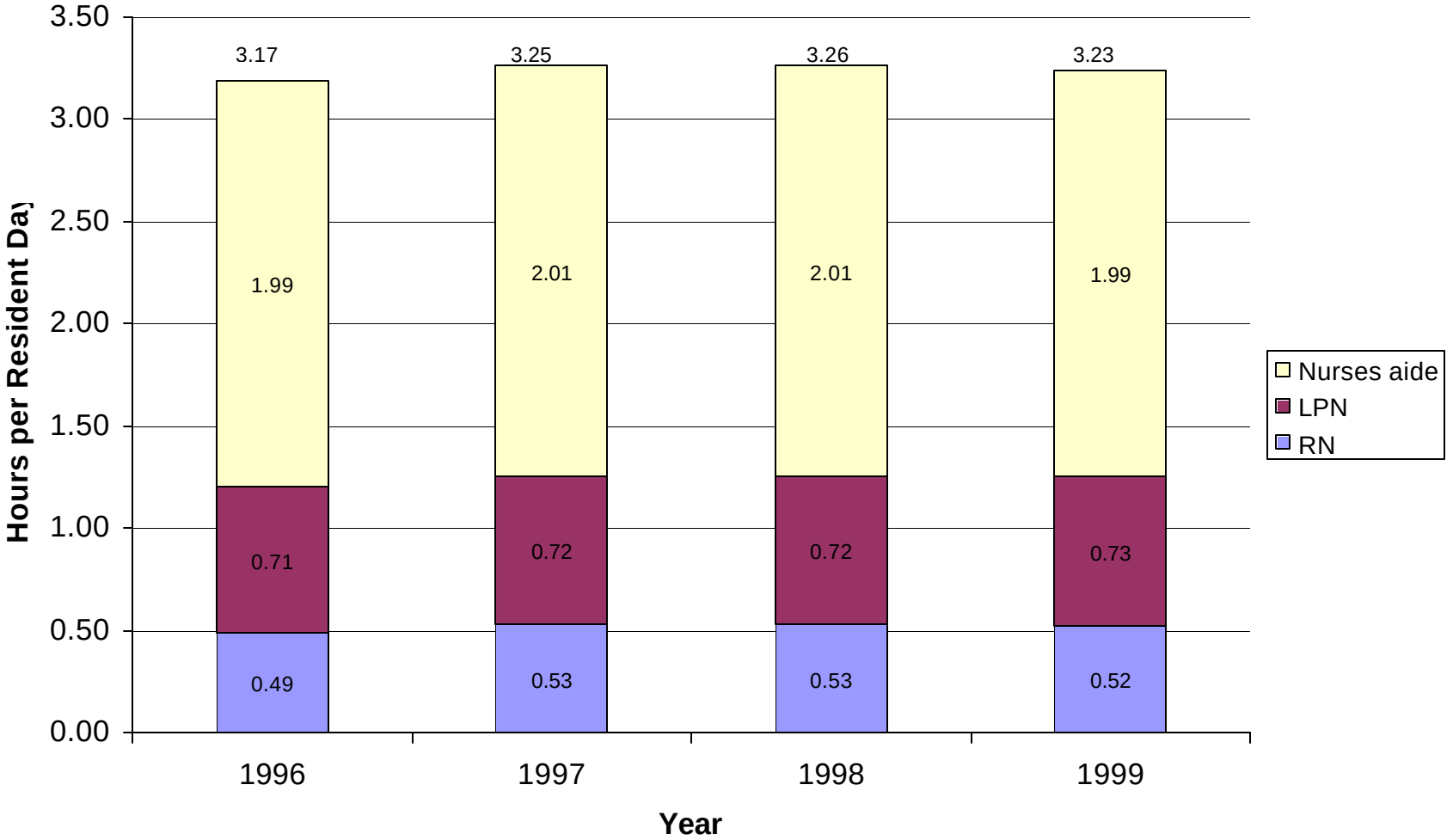
A disproportionate share of hospital-based facilities had at least 15% Medicare residents, and this accounted for part of the difference in hours for high-Medicare facilities. Forty-four percent of facilities in the high-Medicare category were hospital-based (compared to about 6% of facilities in the lower Medicare categories). The difference in staffing levels based on the proportion of Medicare residents remained, however, even when the two types of facilities were examined separately.

- For hospital-based facilities, total hours per resident day were 3.7 for facilities with less than 15% Medicare residents compared to 6.2 for facilities with at least 15% Medicare residents

- RN hours at hospital-based facilities were 2.3, compared to 0.54 at other hospital-based facilities.

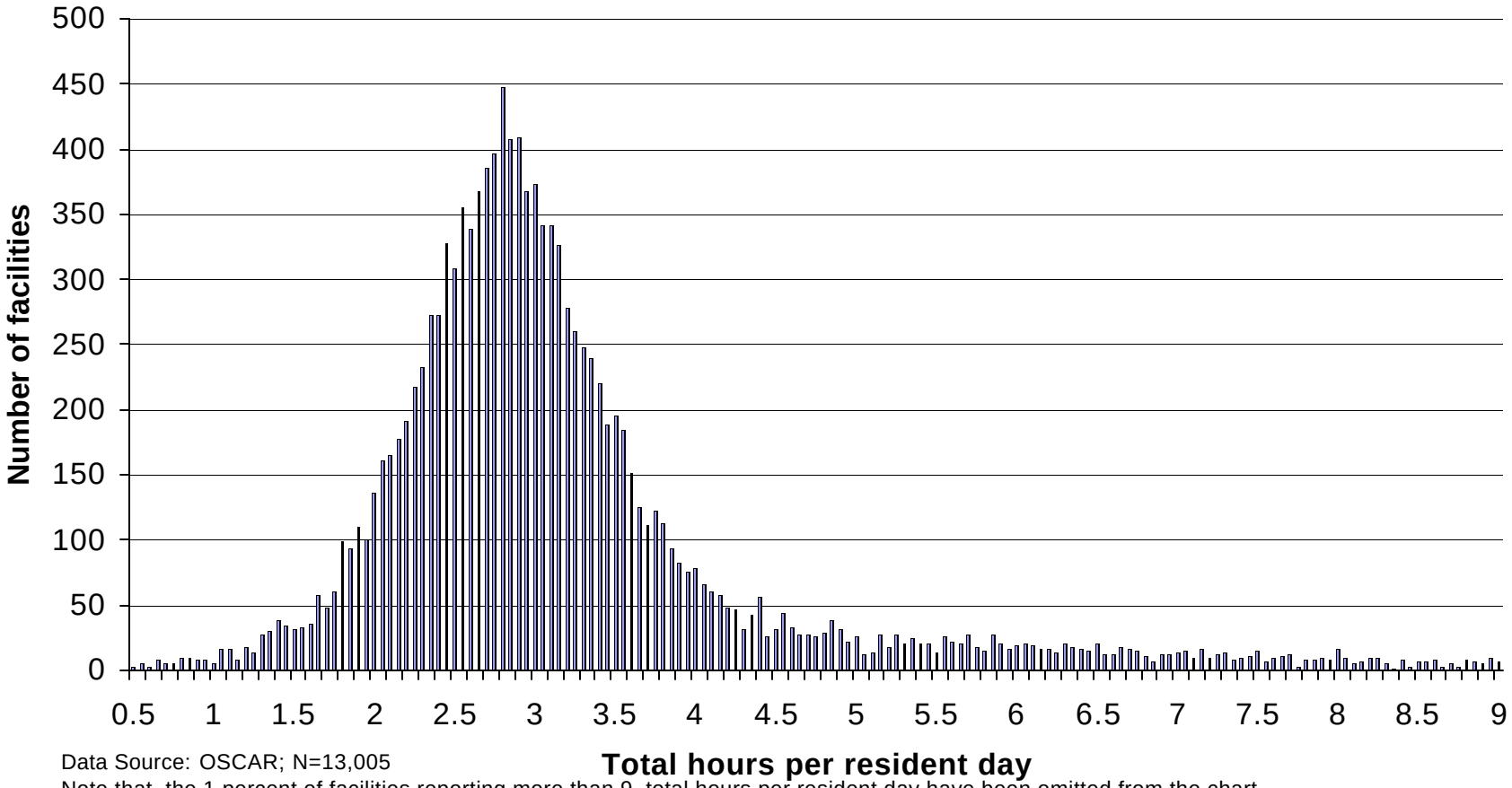
- For freestanding facilities, mean total hours were around 2.85 for facilities with less than 15% Medicare residents, and 3.6 for facilities with 15% or more Medicare residents.

Figure 3.1: Staffing Levels in U.S. Nursing Homes: 1996-1999



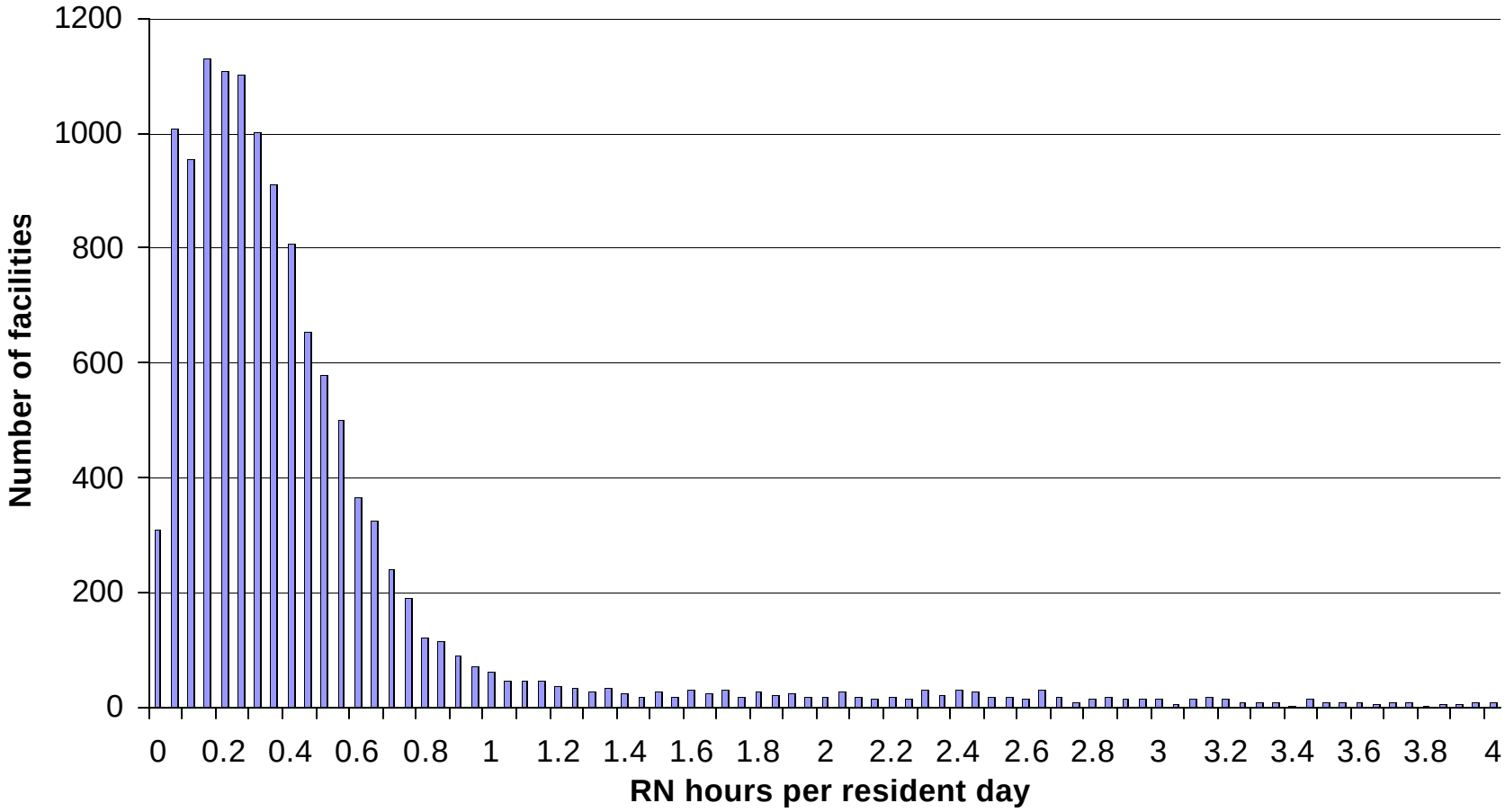
Data source: OSCAR; Directors of Nursing time is not shown, but averaged 0.11 hours for each year.
N=14,335 for 1996, 13,598 for 1997, 13,005 for 1998, 7,019 for 1999 (includes assessments completed prior to July 1, 1999 only).

Figure 3.2: Staffing Levels in U.S. Nursing Homes: Distribution of Total Hours per Resident Day,1998



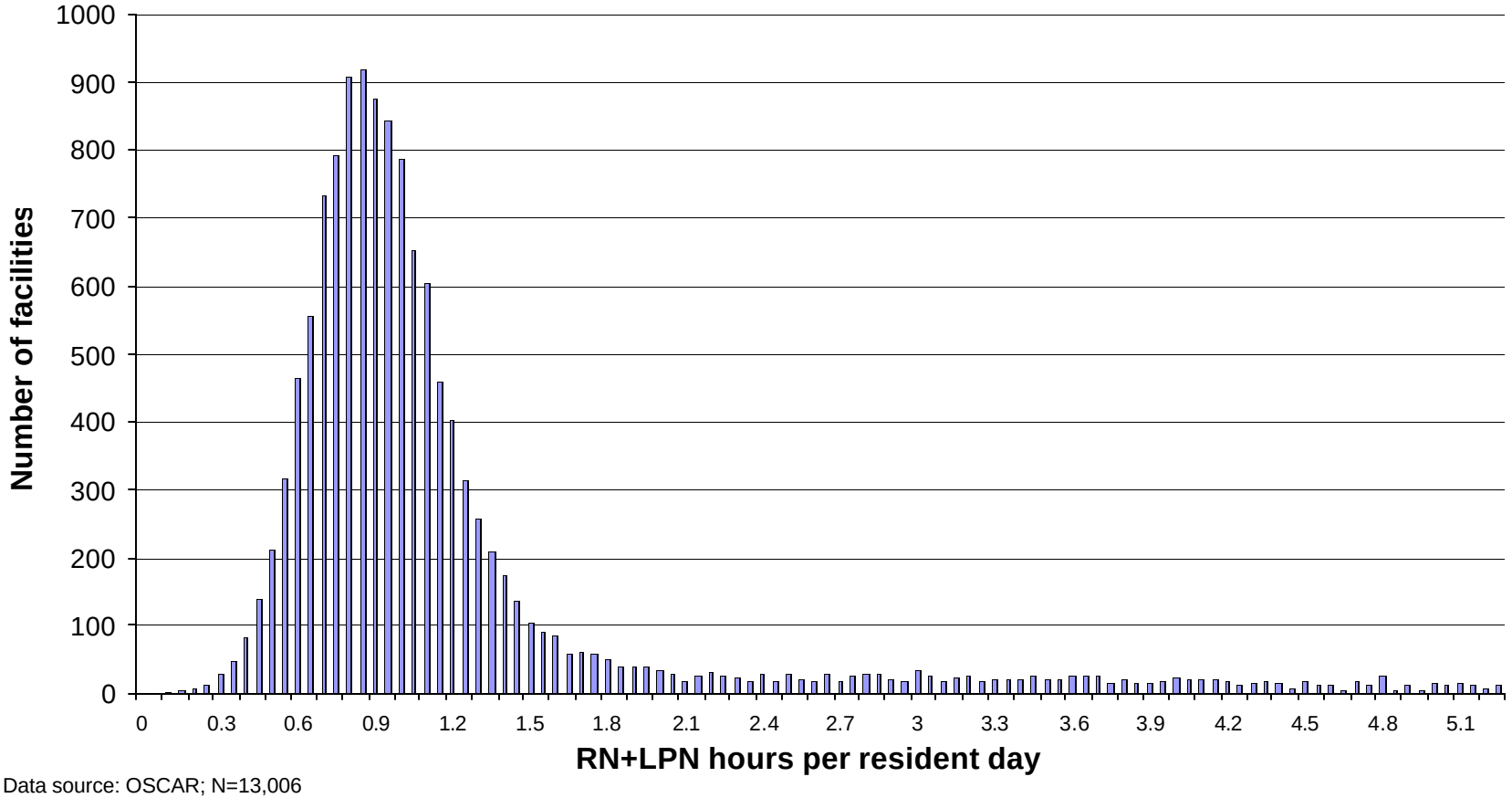
Data Source: OSCAR; N=13,005
Note that the 1 percent of facilities reporting more than 9 total hours per resident day have been omitted from the chart.

Figure 3.3: Staffing Levels in U.S. Nursing Homes: Distribution of RN Hours per Resident Day,1998



Data source: OSCAR; N=13,005
Note that the 0.8 percent of facilities reporting more than 4 RN hours per resident day have been omitted from the chart.

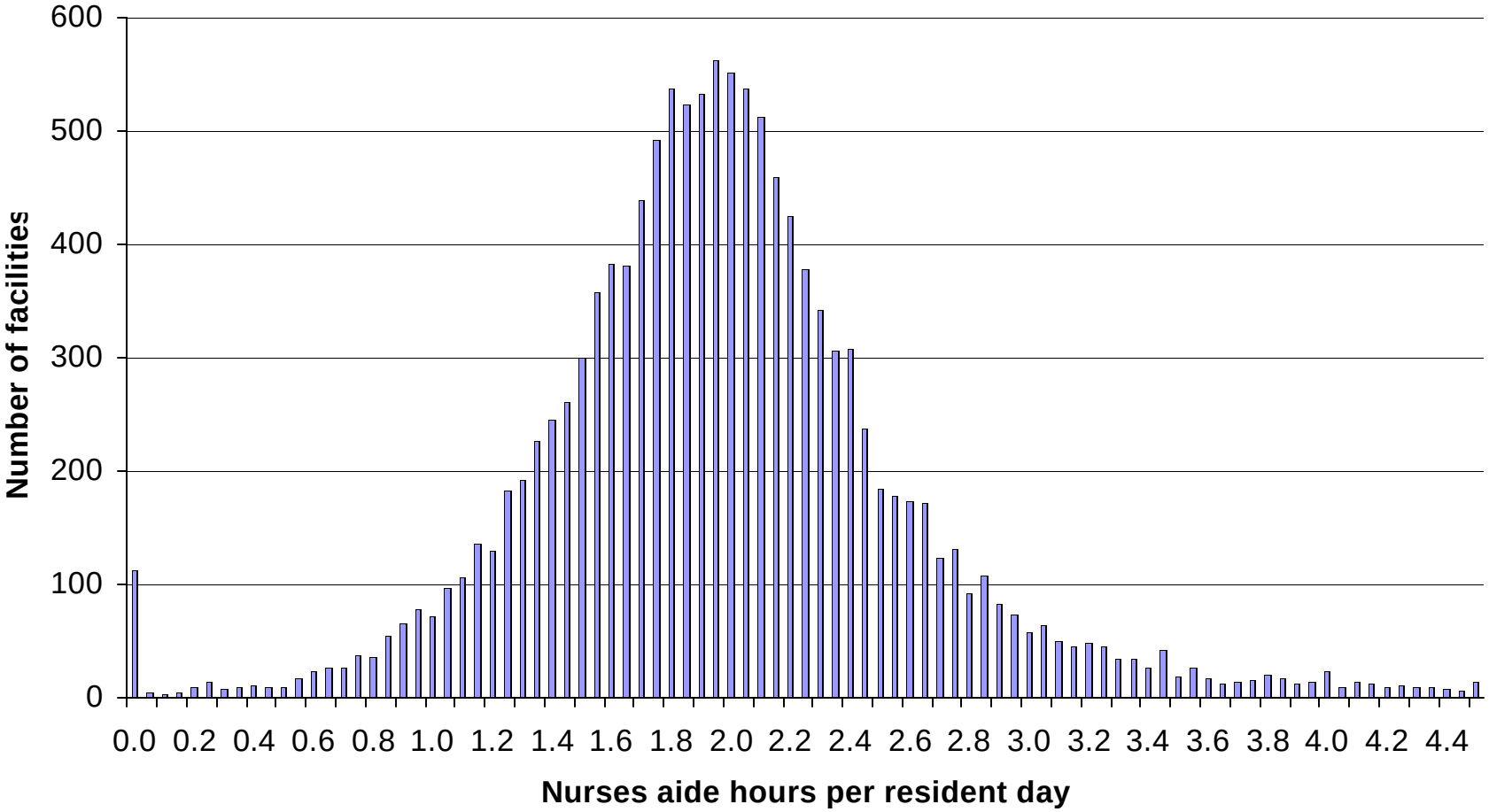
Figure 3.4: Staffing Levels in U.S. Nursing Homes: Distribution of RN and LPN Hours per Resident Day, 1998



Data source: OSCAR; N=13,006

Note that the 1 percent of facilities reporting more than 5.25 RN+LPN hours per resident day have been omitted from the chart.

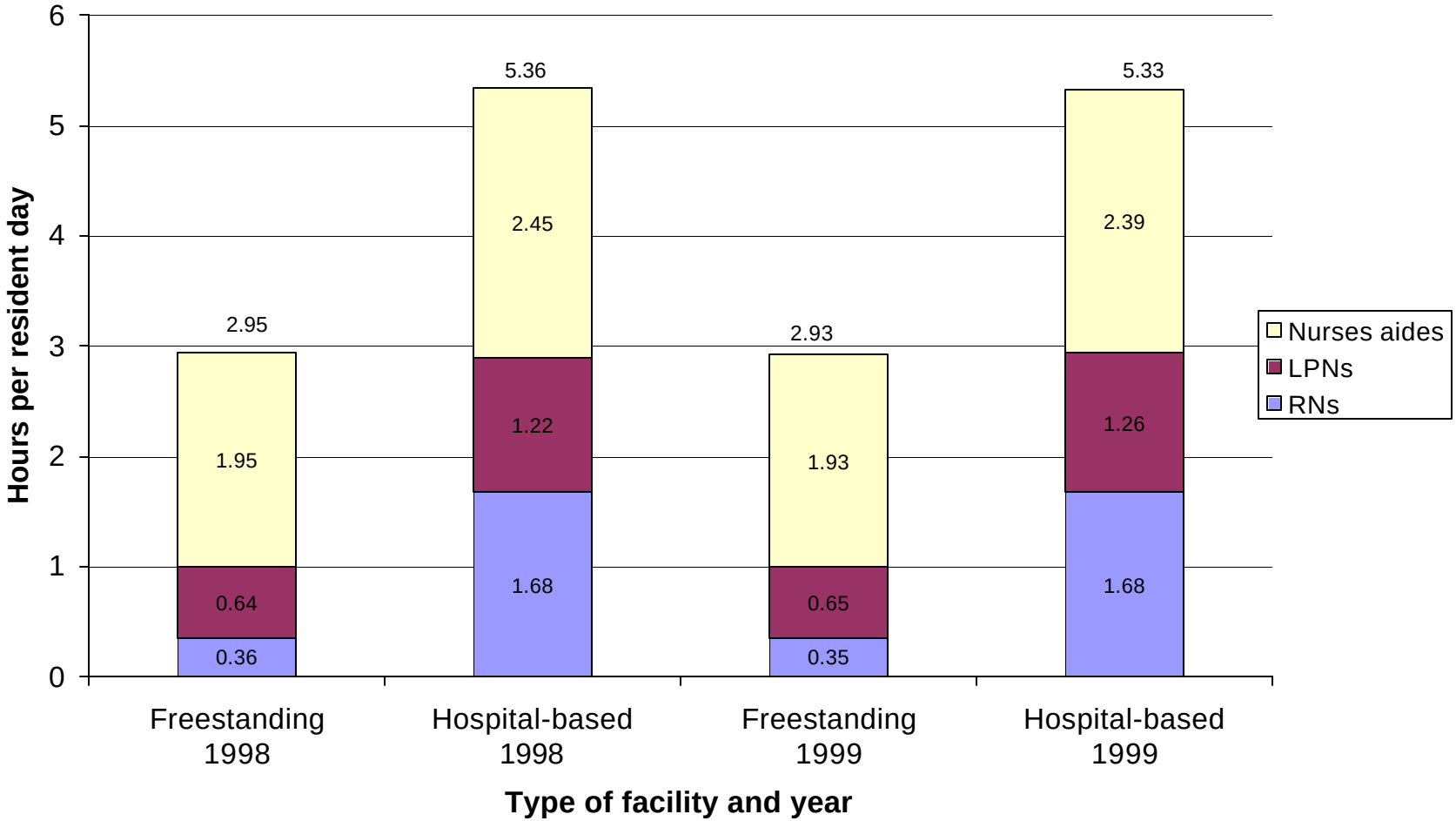
Figure 3.5: Staffing Levels in U.S. Nursing Homes: Distribution of Nurses Aide Hours per Resident Day,1998



Data source: OSCAR; N=13,005

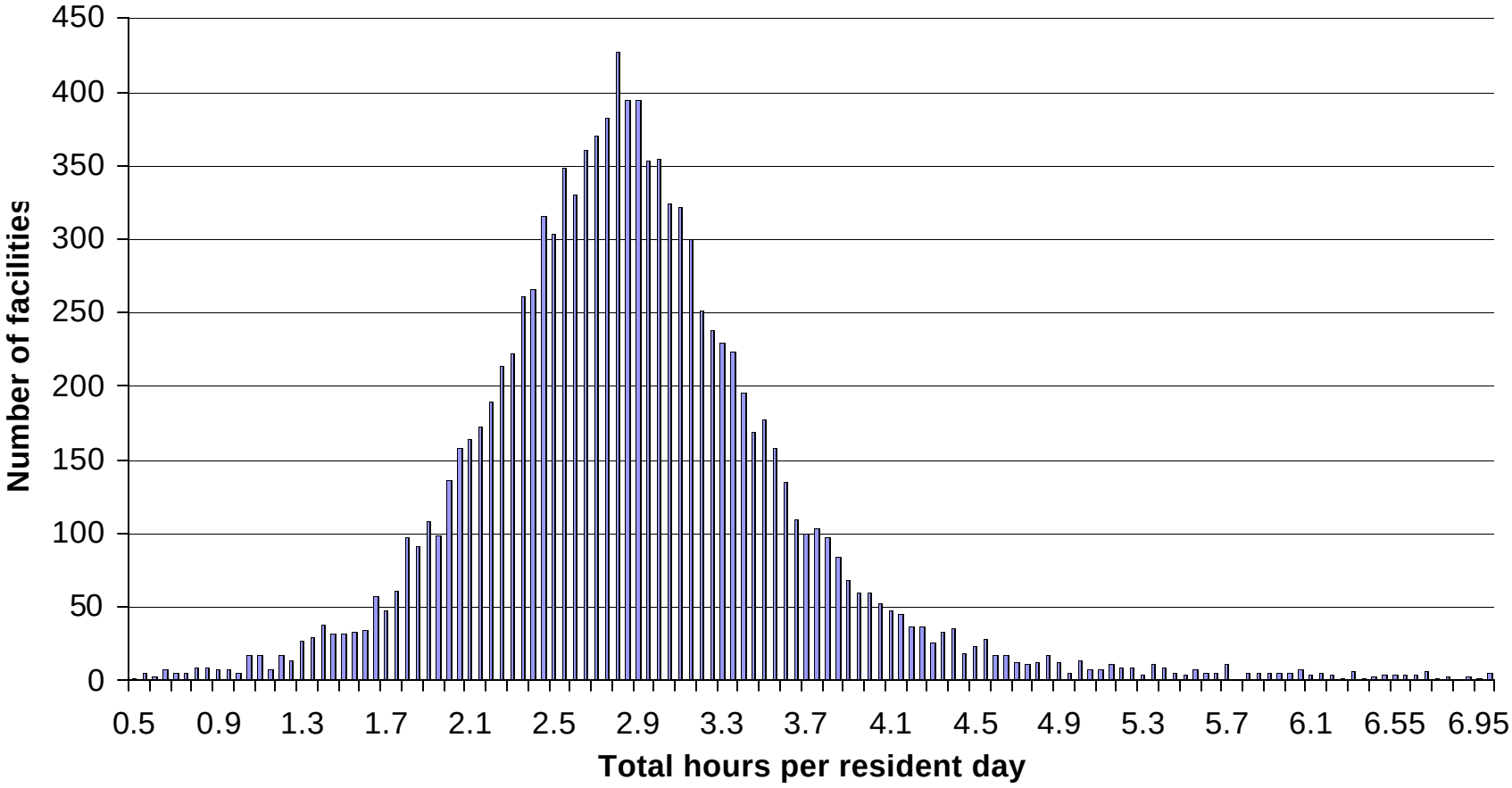
Note that the 1 percent of facilities reporting more than 4.5 nurses aide hours per resident day have been omitted from the chart.

Figure 3.6: Staffing levels in U.S Nursing Homes: Freestanding and Hospital-Based Facilities: 1998-1999



Data source: OSCAR; Directors of Nursing time is not shown, but averaged 0.11 hours for each year. N=13,005 for 1998. 7,019for 1999 (includes assessments completed prior to July 1, 1999 only).

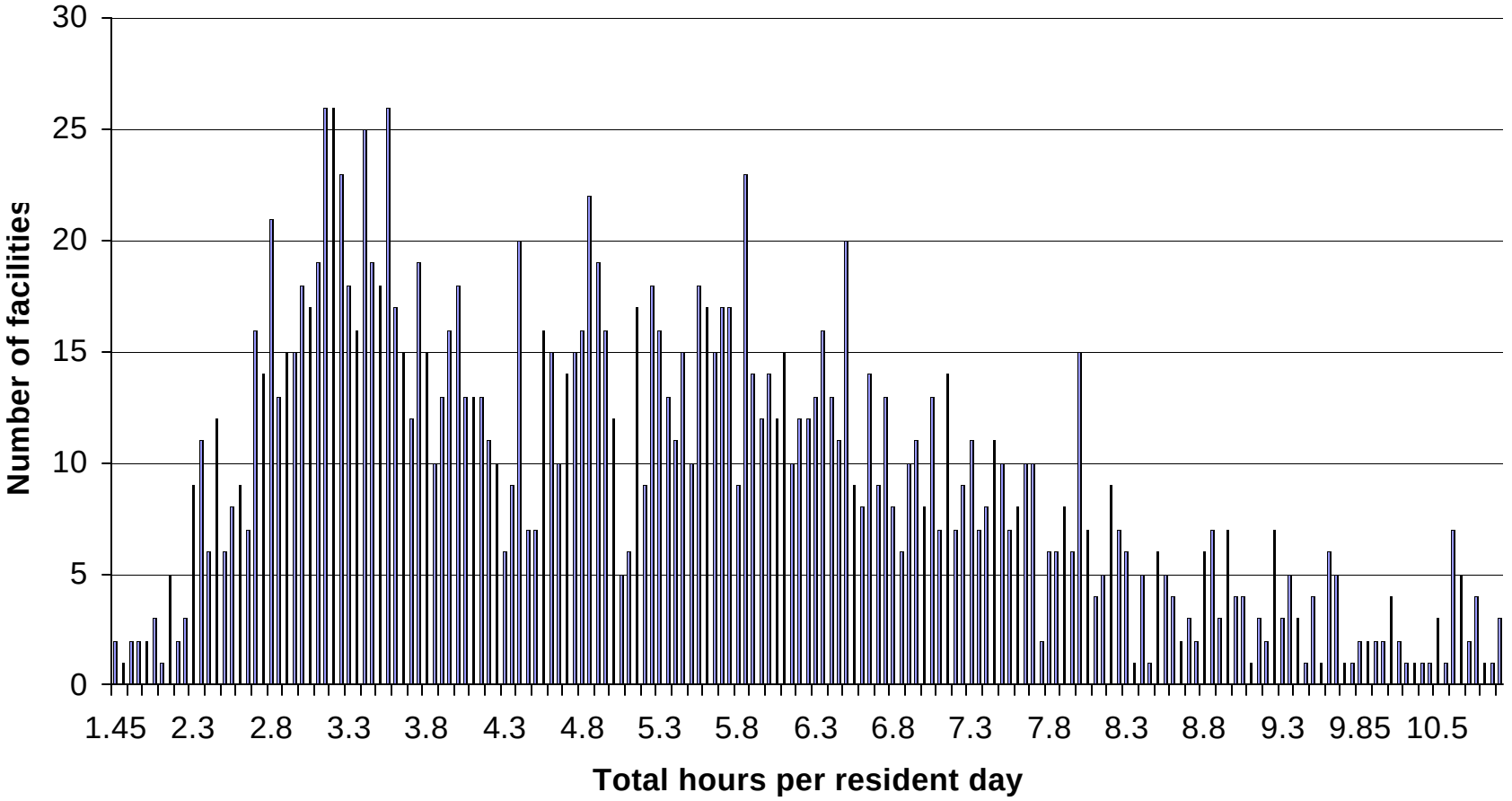
Figure 3.7: Staffing Levels in U.S. Nursing Homes: Distribution of Total Hours per Resident Day for Freestanding Facilities, 1998



Data Source: OSCAR; N=11,295

Note that the 1 percent of facilities reporting more than 7 total hours per resident day have been omitted from the chart.

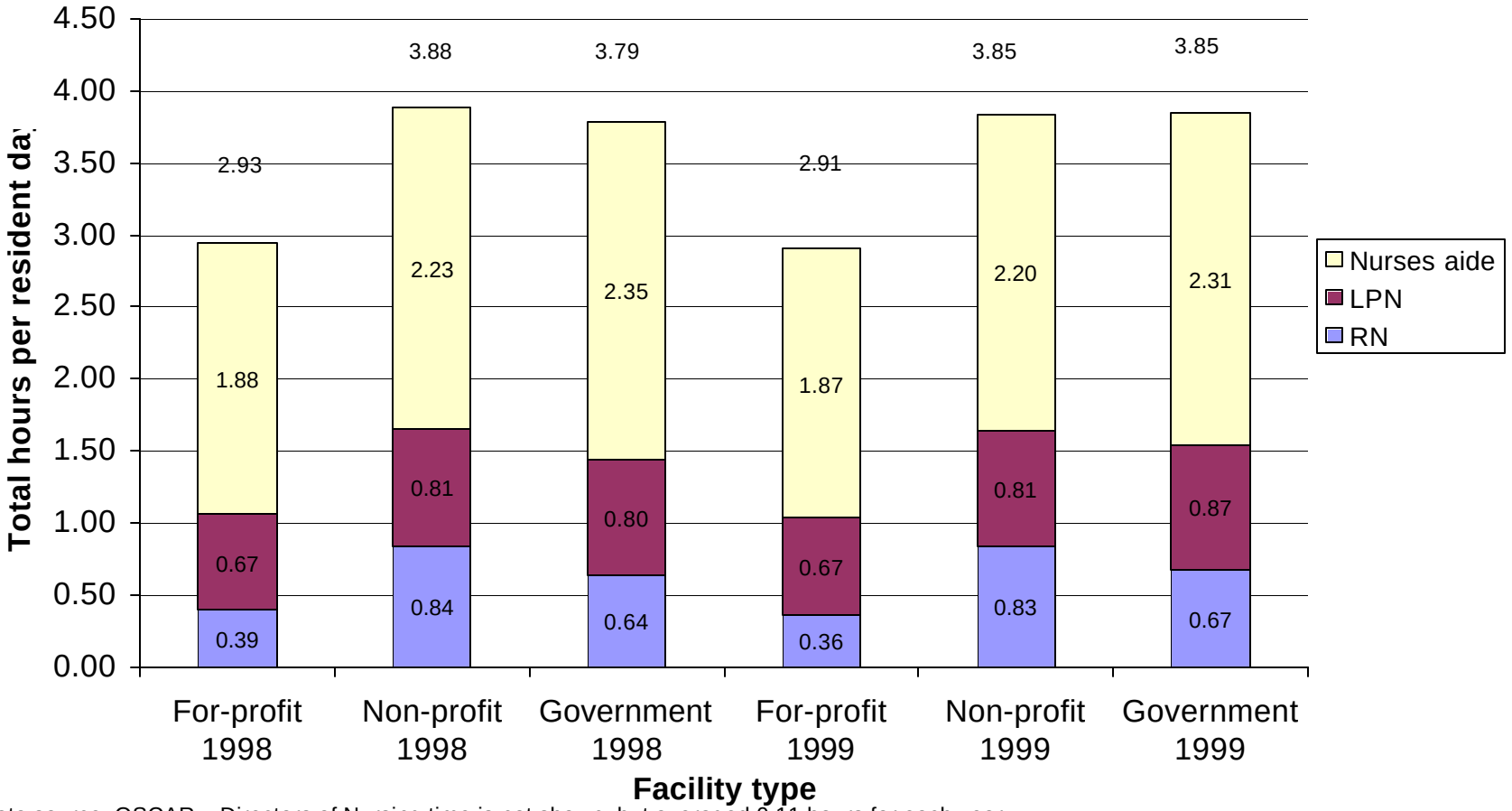
Figure 3.8: Staffing Levels in U.S. Nursing Homes: Distribution of Total Hours per Resident Day for Hospital-Based Facilities, 1998



Data Source: OSCAR; N=1,710

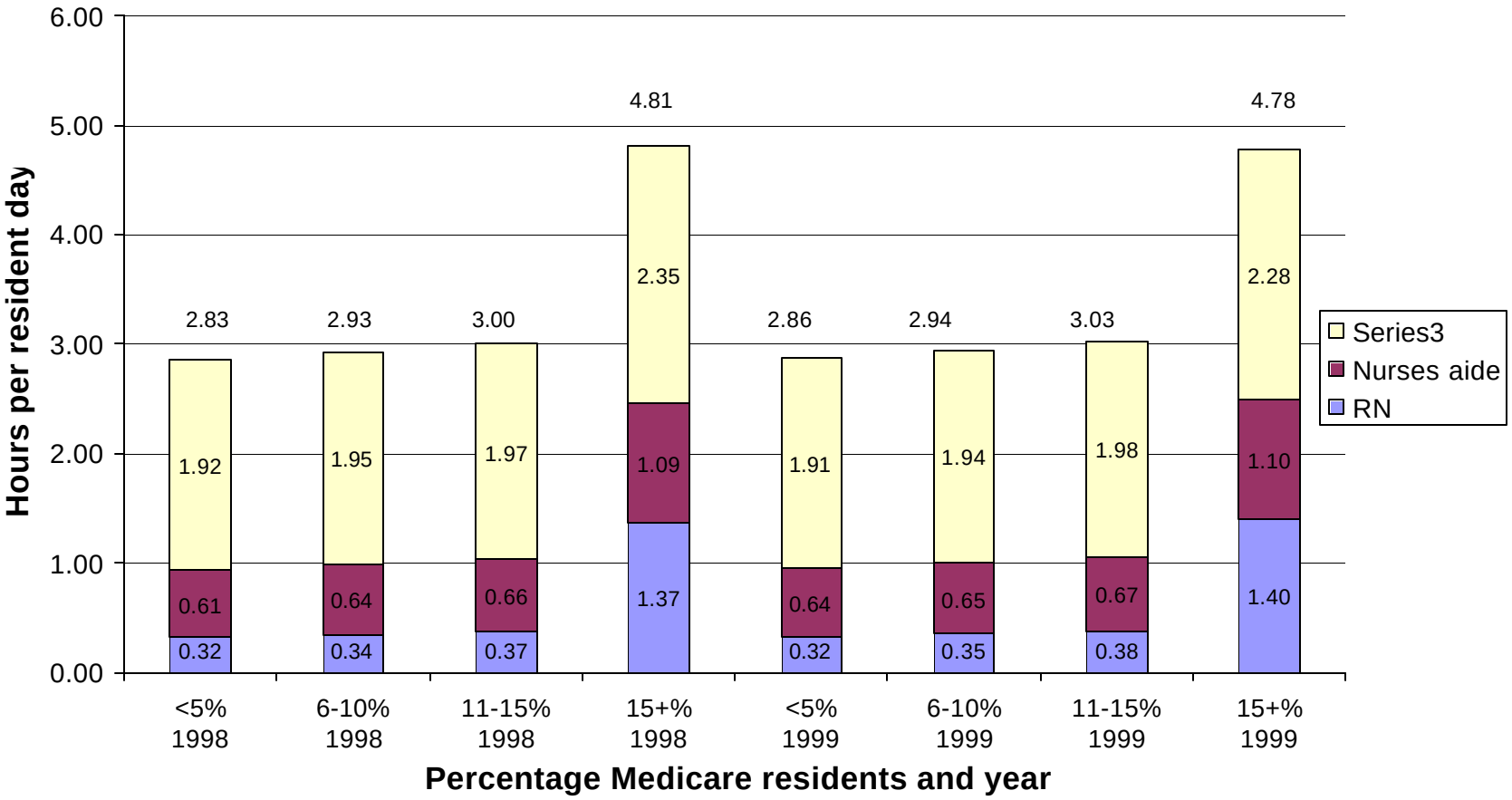
Note that the 0.5 percent of facilities reporting more than 11 total hours per resident day have been omitted from the chart.

Figure 3.9: Staffing Levels in U.S. Nursing Homes: For-Profit, Non-Profit and Government Facilities, 1998-1999



Data source: OSCAR: Directors of Nursing time is not shown, but averaged 0.11 hours for each year.

Figure 3.10: Staffing Levels in U.S. Nursing Homes: By proportion of Medicare residents, 1998-1999



Data source: OSCAR; Directors of Nursing time is not shown, but averaged 0.11 hours for each year.
N=13,005 for 1998, 7,019for 1999 (includes assessments completed prior to July 1, 1999 only).

3.4.3 Mean Staffing Levels by State

There was considerable variation in staffing levels by State, which in 1998 ranged from 2.61 total hours per resident day for Oklahoma facilities to more than 4 hours per resident day in 4 States (Alaska, Delaware, Hawaii, and Idaho) (Figures 3.11 - 3.14; also see Appendix B.2 for detail on State-level staffing by type). Among States with at least 100 facilities, Maine had the highest total staffing level (3.86 hours). Staffing levels tended to be higher for Western States and lower for States in the Midwest.

There was also considerable variance in the mix of staffing used across States:

- The majority of States used 0.4 - 0.5 RN hours, but some States, including Arizona and Pennsylvania had much higher RN levels. Mean RN hours in several Southern and Western States--including Alabama, Arizona, Georgia, Louisiana, and Oklahoma--were 0.3 or less,. With the exception of Oklahoma, these States had above-average levels of LPN staffing, suggesting that there was some substitution of LPNs, perhaps due to RN workforce shortages in some parts of the country.

- All States in the Northeast had mean aide hours of 2.0 or higher, and all States in the West had at least 1.94 aide hours, but mean aide hours for two-thirds of States in the Midwest were less than 2.0. Mean aide hours for Indiana facilities were only 1.57, second lowest in the country behind Oklahoma.

We did not attempt to analyze the sources of State-to-State variation in staffing levels, but this could be due to differences in resident case mix, Medicaid reimbursement levels, labor market conditions (wage rates and availability of staff), differences in practice patterns (e.g., the use of non-nursing staff), differences in State staffing requirements (see discussion below), or differences in the quality of care.

Change in staffing across time: State staffing levels tended to remain relatively constant across time[25]. Alaska, Idaho, Delaware, and Hawaii consistently had the highest staffing levels, while Oklahoma, Kansas, Iowa, Nevada, and South Dakota consistently had fewer than 3 total hours (Table 3.4).

[25] Note that due to the different set of exclusion criteria used in this report, these figures differ somewhat from State-level figures based on OSCAR data that are published elsewhere.

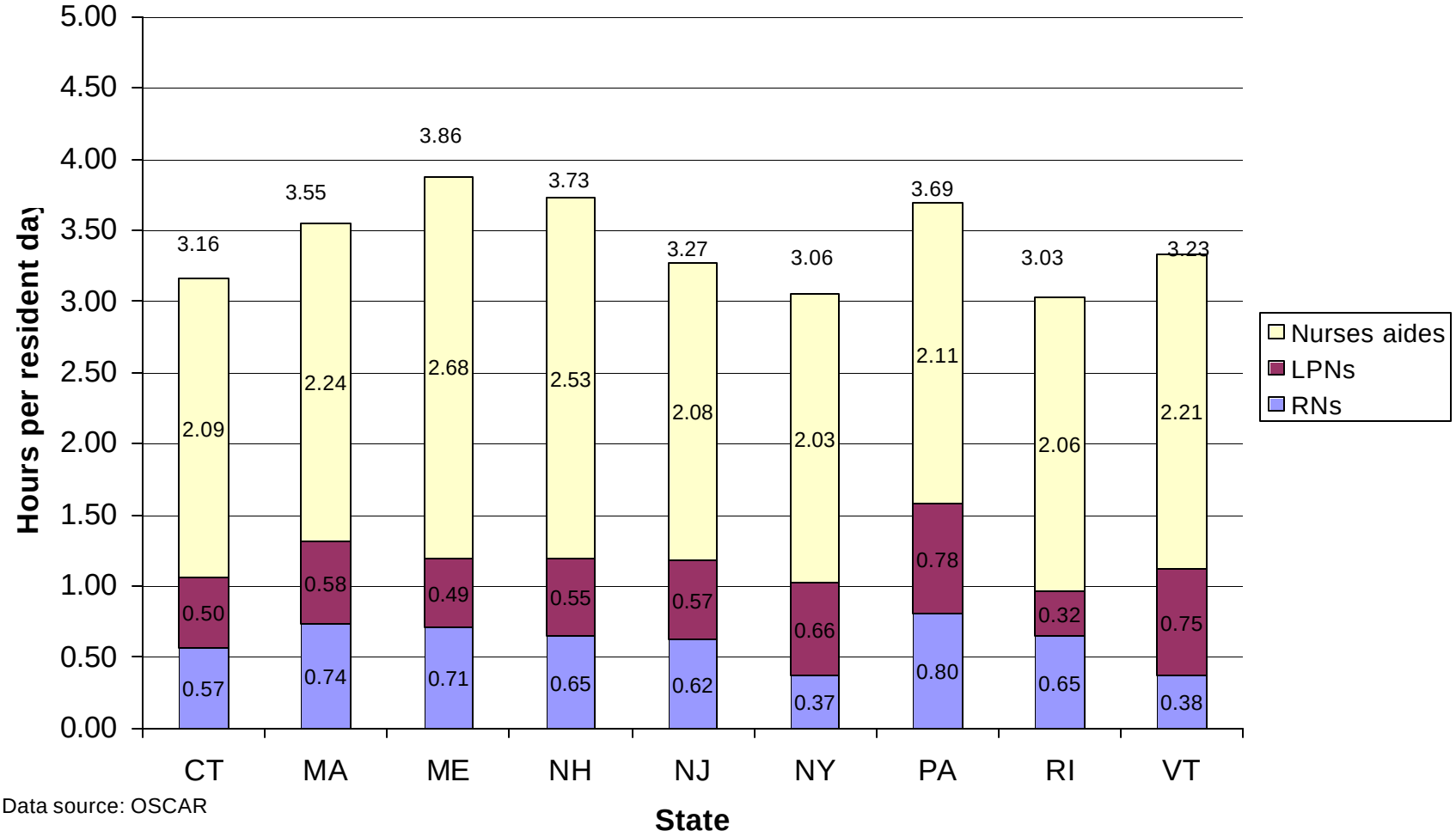
- Between 1996 and 1997, the States with the largest increase in staffing were Oklahoma (14%), Alaska (10%), and West Virginia (10%). Most States had staffing increases between 1996 and 1997, but total staffing decreased in Nevada and Wyoming (from Table 3.3)

- Total hours for Delaware facilities increased by 16% between 1997 and 1998. Other States with large increases included Utah (a 5% increase) and Tennessee (6%). Between 1997 and 1998, total hours decreased by more than 9% for West Virginia facilities and by 5% in New Mexico.

- Between 1998 and 1999, total hours decreased by 13% for Arizona facilities. Delaware, New Mexico, Montana, and Maine also experienced decreases of 4% of more during this period. Total hours for Nevada facilities increased by more than 20%, and total hours for facilities in Utah, Idaho, North Dakota, and Idaho increased noticeably.

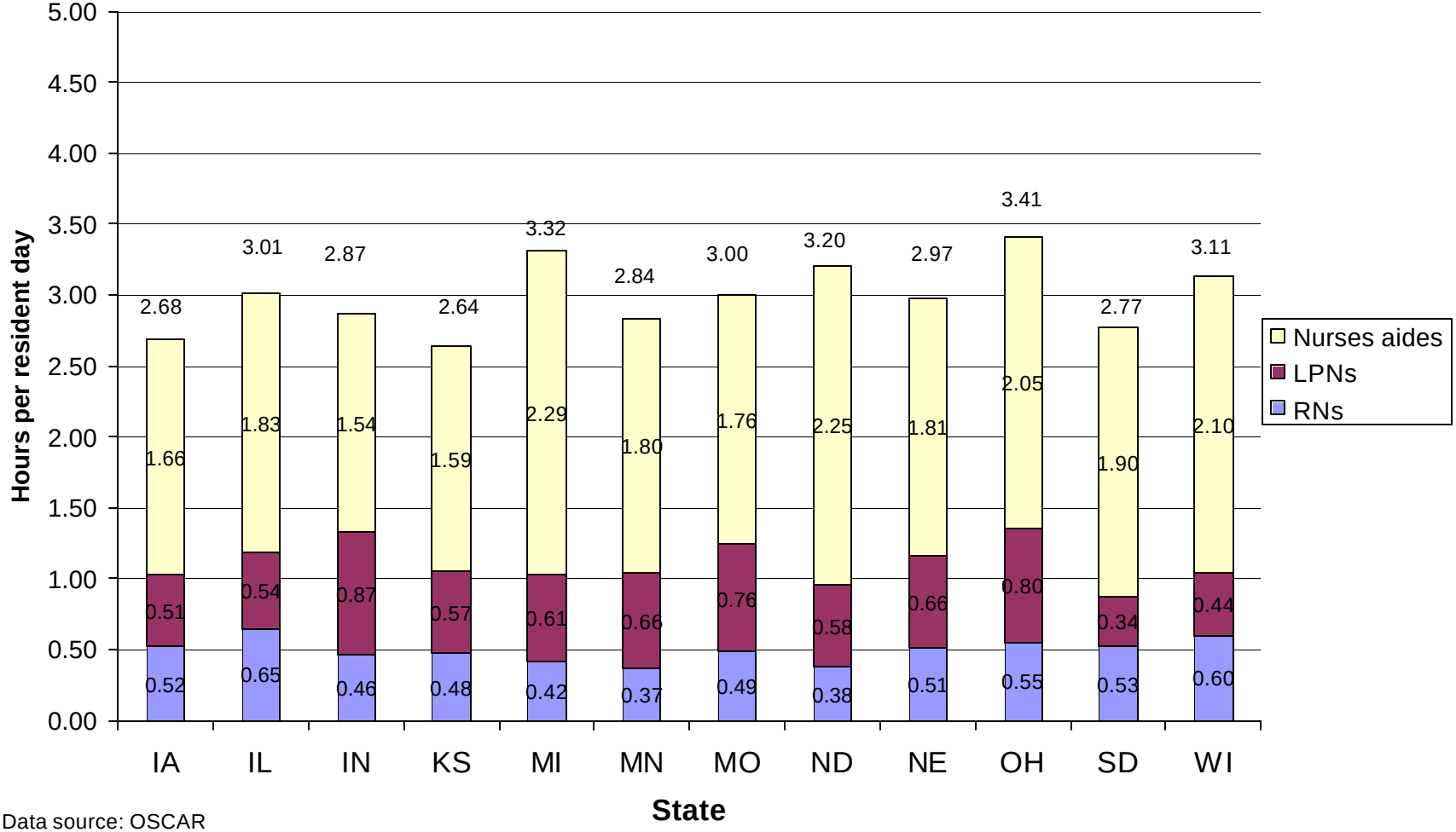
(Appendix B.2a presents the change in staffing by type and by State for 1996-1999).

Figure 3.11: Staffing Levels in U.S. Nursing Homes: Northeast Region, 1998



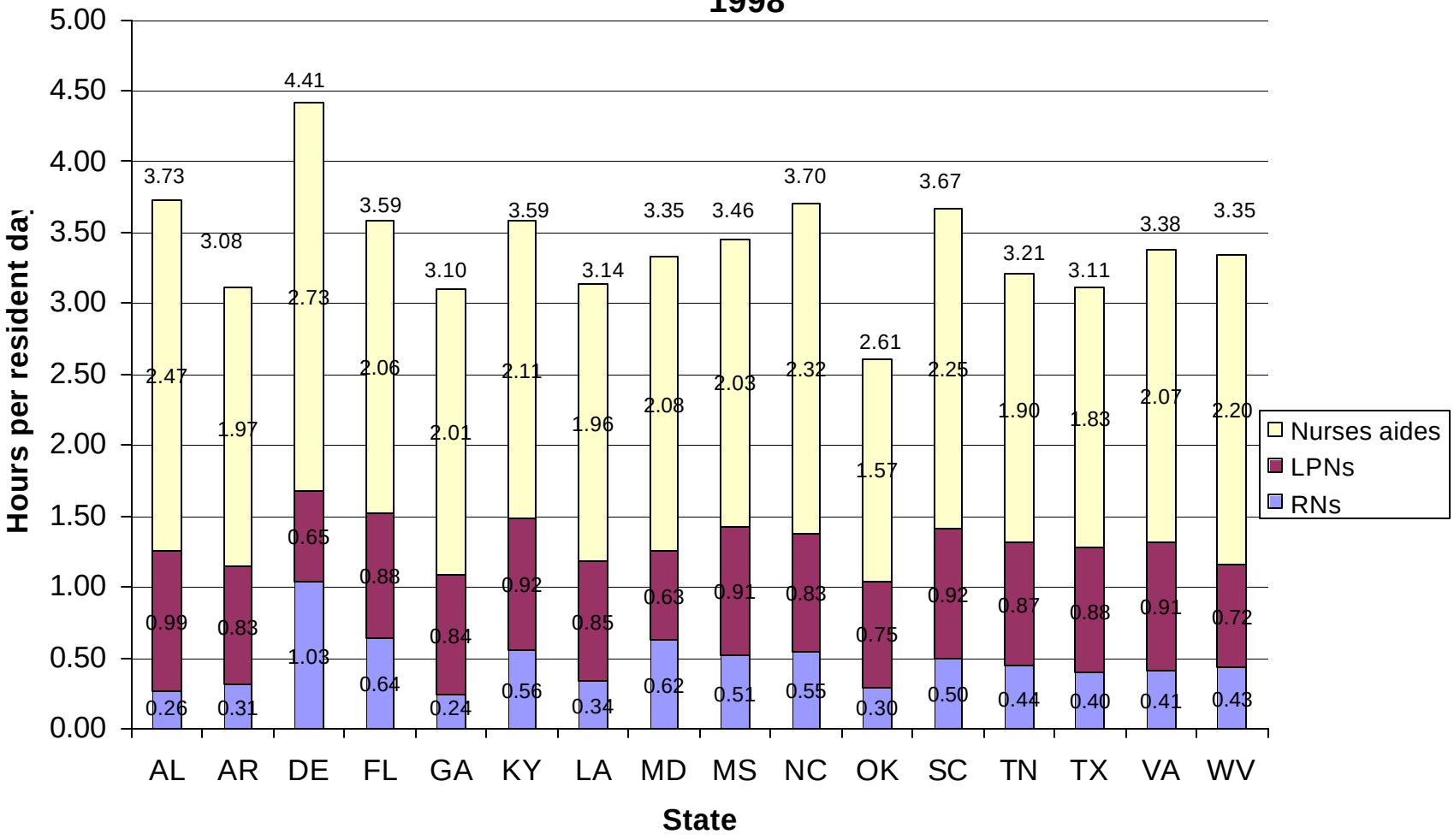
Data source: OSCAR

Figure 3.12: Staffing Levels in U.S. Nursing Homes: Midwest Region, 1998



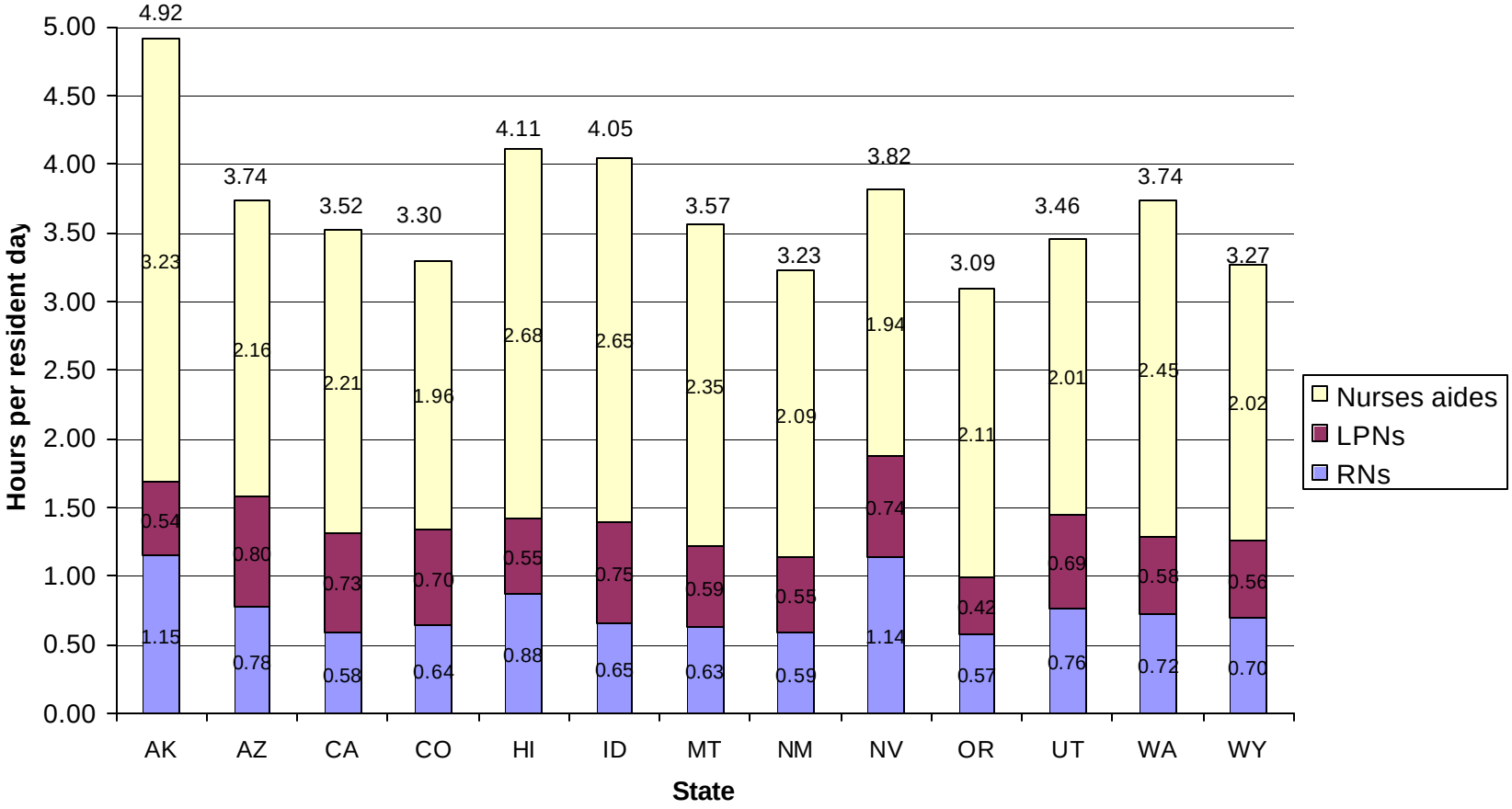
Data source: OSCAR

Figure 3.13: Staffing Levels in U.S. Nursing Homes: South Region, 1998



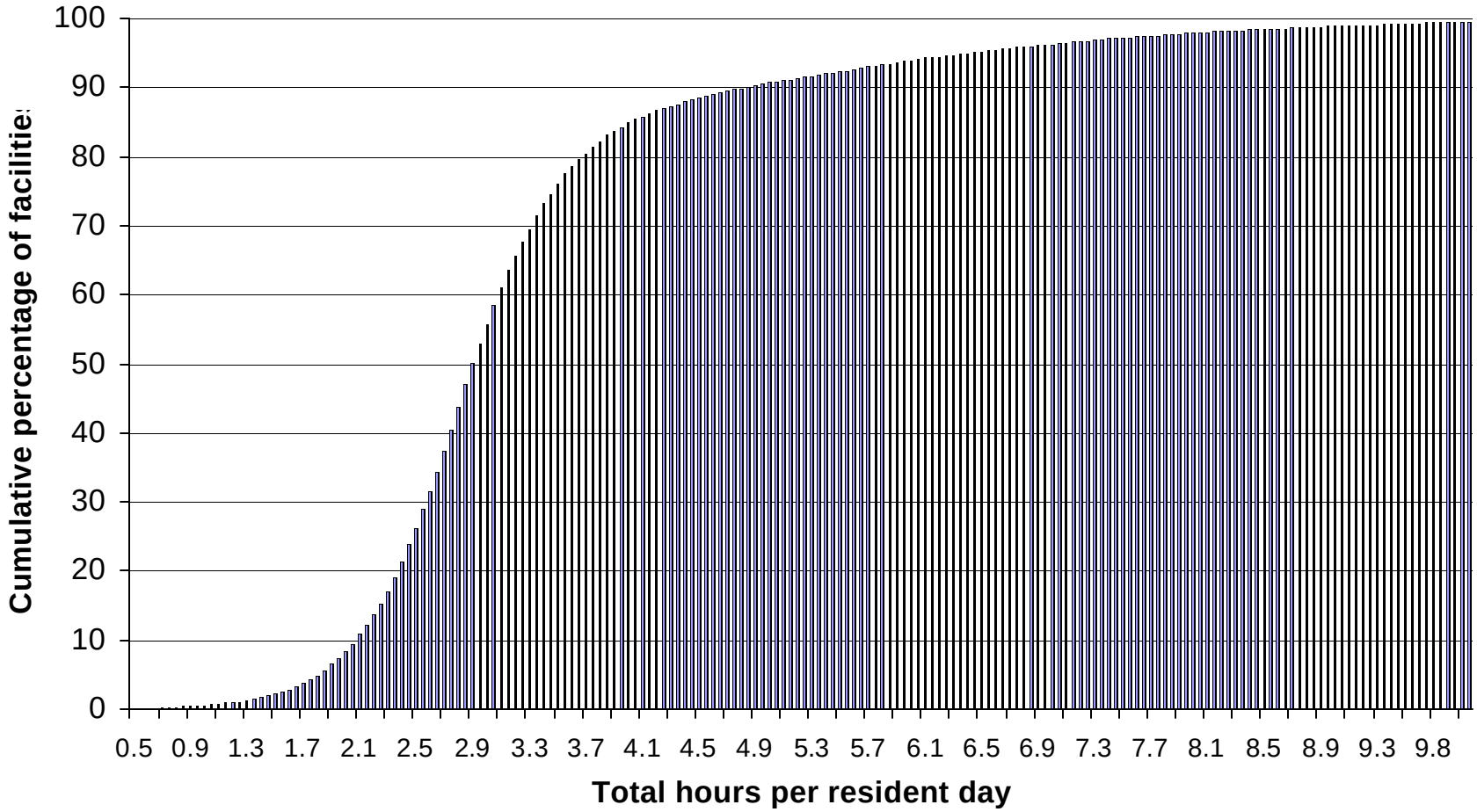
Data source: OSCAR

Figure 3.14: Staffing Levels in U.S. Nursing Homes: West Region 1998



Data source: OSCAR

Figure 3.15: Staffing Levels in U.S. Nursing Homes: Cumulative Distribution of Total Hours per Resident Day, 1998



Data Source: OSCAR

Table 3.3: Staffing Levels in U.S. Nursing Homes: Total Hours per Resident Day by State, 1996-1999								
State	**1996**		**1997**		**1998**		**1999^**	
	Number	**Mean**	**Number**	**Mean**	**Number**	**Mean**	**Number**	**Mean**
AK	15	4.96	11	5.49	11	4.92	7	4.74
AL	188	3.54	166	3.56	185	3.73	91	3.59
AR	217	2.77	218	3.03	195	3.12	106	3.19
AZ	117	3.52	91	3.71	102	3.74	36	3.25
CA	1099	3.51	1026	3.57	938	3.52	478	3.41
CO	190	3.26	186	3.39	162	3.30	97	3.23
CT	214	3.00	211	3.10	190	3.16	121	3.15
DE	31	3.73	32	3.81	24	4.41	17	3.88
FL	520	3.60	492	3.64	481	3.59	306	3.49
GA	315	3.03	291	3.10	286	3.10	148	3.06
HI	31	3.92	34	4.13	32	4.11	19	3.83
IA	414	2.68	393	2.64	396	2.69	192	2.74
ID	74	3.97	58	4.27	55	4.05	30	4.28
IL	754	2.86	713	2.93	707	3.01	389	3.10
IN	491	2.80	458	2.83	455	2.87	248	2.94
KS	361	2.56	363	2.62	353	2.64	200	2.69
KY	256	3.51	222	3.71	246	3.59	128	3.60
LA	267	3.08	259	3.21	248	3.14	140	3.14
MA	486	3.46	461	3.46	441	3.55	278	3.45
MD	191	3.07	185	3.20	159	3.34	49	3.42
ME	115	3.62	113	3.73	103	3.88	58	3.69
MI	390	3.20	365	3.33	350	3.32	166	3.32
MN	366	2.84	361	2.86	371	2.84	187	2.82
MO	473	3.06	461	3.05	431	3.00	227	3.09
MS	172	3.31	171	3.52	153	3.46	72	3.28
MT	85	3.51	89	3.47	82	3.57	49	3.40
NC	348	3.46	343	3.64	340	3.70	161	3.58
ND	82	3.24	76	3.28	79	3.20	40	3.52
NE	213	2.83	210	2.93	197	2.97	109	3.05
NH	71	3.49	72	3.61	62	3.73	34	3.83
NJ	299	3.16	285	3.18	278	3.27	107	3.37
NM	70	3.26	67	3.41	55	3.23	36	3.03
NV	37	3.90	27	3.70	35	3.82	15	4.73

Table 3.3: Staffing Levels in U.S. Nursing Homes: Total Hours per Resident Day by State, 1996-1999								
State	**1996**		**1997**		**1998**		**1999^**	
	Number	**Mean**	**Number**	**Mean**	**Number**	**Mean**	**Number**	**Mean**
NY	549	3.00	516	2.99	504	3.06	279	3.06
OH	895	3.43	795	3.48	775	3.41	381	3.52
OK	316	2.30	325	2.64	256	2.61	163	2.46
OR	141	3.19	135	3.14	129	3.09	63	3.06
PA	685	3.43	691	3.58	688	3.69	364	3.58
RI	77	2.87	68	3.00	69	3.03	38	3.11
SC	148	3.56	150	3.65	126	3.67	72	3.65
SD	97	2.65	86	2.72	81	2.77	45	2.66
TN	286	2.93	277	3.02	276	3.21	128	3.06
TX	1060	3.14	1015	3.21	914	3.11	536	3.01
UT	78	3.22	77	3.28	67	3.46	35	3.83
VA	243	3.21	217	3.31	207	3.38	125	3.41
VT	34	3.30	32	3.32	29	3.33	25	3.34
WA	240	3.56	224	3.80	218	3.74	120	3.73
WI	383	3.03	362	3.18	356	3.13	199	2.99
WV	97	3.37	66	3.70	65	3.35	79	3.41
WY	34	3.53	32	3.25	31	3.27	18	3.24

^: 1999 data were available only for assessments completed before July 1, 1999
Source: OSCAR

3.4.4 Selected Policy Issues

3.4.4.1 Impact Analysis of Proposed Minimum Staffing Requirement

We analyzed the proportion of facilities that would be affected by the 4.55 total hours per resident day recommended by a conference of experts that was convened by the John A. Hartford Institute for Geriatric Nursing, Division of Nursing, New York University in April 1998 (Harrington et. al., 2000). This conference included nurse researchers, educators, and administrators in long term care, consumer advocates, health economists, and health services researchers with knowledge of nursing homes. We refer to this recommendation as the 'Hartford' proposal.[26] We used 1998 OSCAR data to analyze the proportion of facilities that would have to increase staffing to be in compliance, and also the distribution of staffing increases that would be required. So that the impact of other potential minimum staffing levels could be examined, we also analyzed the cumulative distribution of staffing measures. The cumulative distributions allow one to measure the impact of any potential minimum staffing level (as long as it can be expressed in terms of nursing hours per resident day).

Analysis of the Hartford proposal. The Hartford requirement would require nearly 90% of facilities to increase staffing levels, and would require large staffing increases for some facilities (Table 3.4)[27]. The impact of the requirement would be much larger on freestanding facilities than on hospital-based nursing home, and would also fall more heavily on for-profit nursing homes than on non-profit or government facilities. Without increased reimbursement rates, the proposal does not appear to be practical. Given the tight labor market conditions under which many facilities currently operate, some facilities likely would not be able to reach the Hartford standard even if they tried to (given the current wages paid to nurses aides).

- More than 56% of facilities would have to increase total staffing by 50% of more, including 15% that would need to increase staffing by at least 100 percent. Even if all facilities increased staffing by 20%, only 18% of facilities would have at least 4.55 total hours.

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[26] See Chapter 6 for a more detailed discussion and analysis of the Hartford nurse staffing standards.

[27] Since the Hartford proposal of 4.55 total hours per resident day includes all administrative and direct care hours and our estimates of total hours exclude hours of the Director of Nursing, our estimates would differ somewhat if our file did not have this exclusion. But the differences are negligible. Table 3.4 indicates that 88.6% of facilities had less than 4.55 nursing hours; without the exclusion 87.1% of facilities had less than 4.55 total nursing hours per resident day.

- More than 95% of freestanding facilities used less than 4.55 total hours in 1998. If the Hartford standard were enacted, 45% of facilities would need to increase staffing by 50-99% and 18% would need to increase staffing by 100% or more. Only 41% of hospital-based facilities had less than 4.55 total hours.

- The impact of the Hartford standard would be greater on for-profit facilities, which have lower mean staffing levels than non-profit or government facilities. Nearly 95% of for-profits used fewer than 4.55 total hours, and 47% would have to increase staffing by 50-99% to be at the Hartford recommended level. Seventy-seven percent of non-profit facilities and 81% of government facilities used fewer than 4.55 hours.

- While the majority of facilities in all States used fewer than 4.55 hours, the potential impact of the Hartford requirement varied by State. In Oklahoma, which had the lowest staffing level, 56% of facilities would need to increase staffing by 100% or more to reach the 4.55 level (Table 3.5). For virtually all States, the Hartford proposal would require at least 30% of facilities to increase total staffing by at least 50 percent.

Analysis of cumulative distribution of staffing levels. It is not possible to anticipate what type of minimum staffing levels might be proposed in the future. So that this chapter could be used to analyze the impact of other requirements, we analyzed the cumulative distribution of hours per resident day. These are presented in Figures 3.15 - 3.19. Additional detail on these cumulative distributions can also be found in Appendix B.3.

Table 3.4: Staffing Levels in U.S. Nursing Homes: Impact of Hartford Proposal (4.55 hours per resident day), 1998

Facilities	% affected by requirement	Distribution of required increase:						
		#10%	11-20%	21-30%	31-40%	41-50%	50-99%	$100%
All	88.6	2.7	4.2	6.3	8.7	10.5	40.9	15.3
Freestanding	95.9	2.3	4.0	6.4	9.1	11.3	45.4	17.4
Hospital-based	40.2	5.1	5.7	5.8	5.8	5.6	10.8	1.3
For-profit	94.8	1.6	3.0	5.1	7.7	10.4	47.7	19.3
Non-profit	76.7	4.4	6.1	8.3	10.8	10.5	28.4	8.4
Government	79.9	5.0	8.0	9.7	9.6	11.9	29.2	6.3

Note: The Hartford standard is 4.55 hours per resident day (see Harrington et. al., 2000).

Source: OSCAR

Table 3.5: Staffing Levels in U.S. Nursing Homes: Impact of Hartford Proposal (4.55 hours per resident day), By State, 1998

State	% affected by requirement	Distribution of staffing increase required for facilities not in compliance						
		#10%	11-20%	21-30%	31-40%	41-50%	51-99%	$100%
AK	55	27	18	0	0	9	0	0
AL	90	12	16	19	16	11	17	0
AR	89	1	1	3	4	5	60	16
AZ	76	2	3	6	4	12	44	6
CA	84	2	4	7	8	12	45	7
CO	91	4	4	6	9	12	51	6
CT	97	5	10	12	15	16	26	14
DE	67	4	4	13	0	8	38	0
FL	84	3	4	7	11	12	42	5
GA	94	2	2	3	10	12	59	6
HI	78	9	3	6	25	13	22	0
IA	92	1	1	2	3	3	42	41
ID	69	9	5	13	13	9	18	2
IL	86	1	2	2	4	6	36	36
IN	91	0	2	2	3	4	49	30
KS	92	1	1	1	2	5	39	44
KY	82	4	3	4	4	12	46	9
LA	89	2	0	2	1	2	72	10
MA	89	3	9	13	20	14	27	3
MD	86	1	3	6	4	14	50	8
ME	84	8	9	22	21	13	11	1
MI	95	2	8	11	13	16	42	3
MN	98	2	2	5	9	13	53	14
MO	86	1	2	2	3	4	33	41
MS	86	1	2	5	32	15	45	9
MT	85	1	11	10	6	21	35	1
NC	86	6	9	12	14	10	34	1
ND	96	4	5	9	11	20	42	5
NE	91	3	2	3	5	3	48	28
NH	87	5	11	5	21	15	26	5
NJ	93	2	4	8	9	17	49	4
NM	87	5	2	0	5	4	56	15
NV	74	11	3	0	6	0	43	11

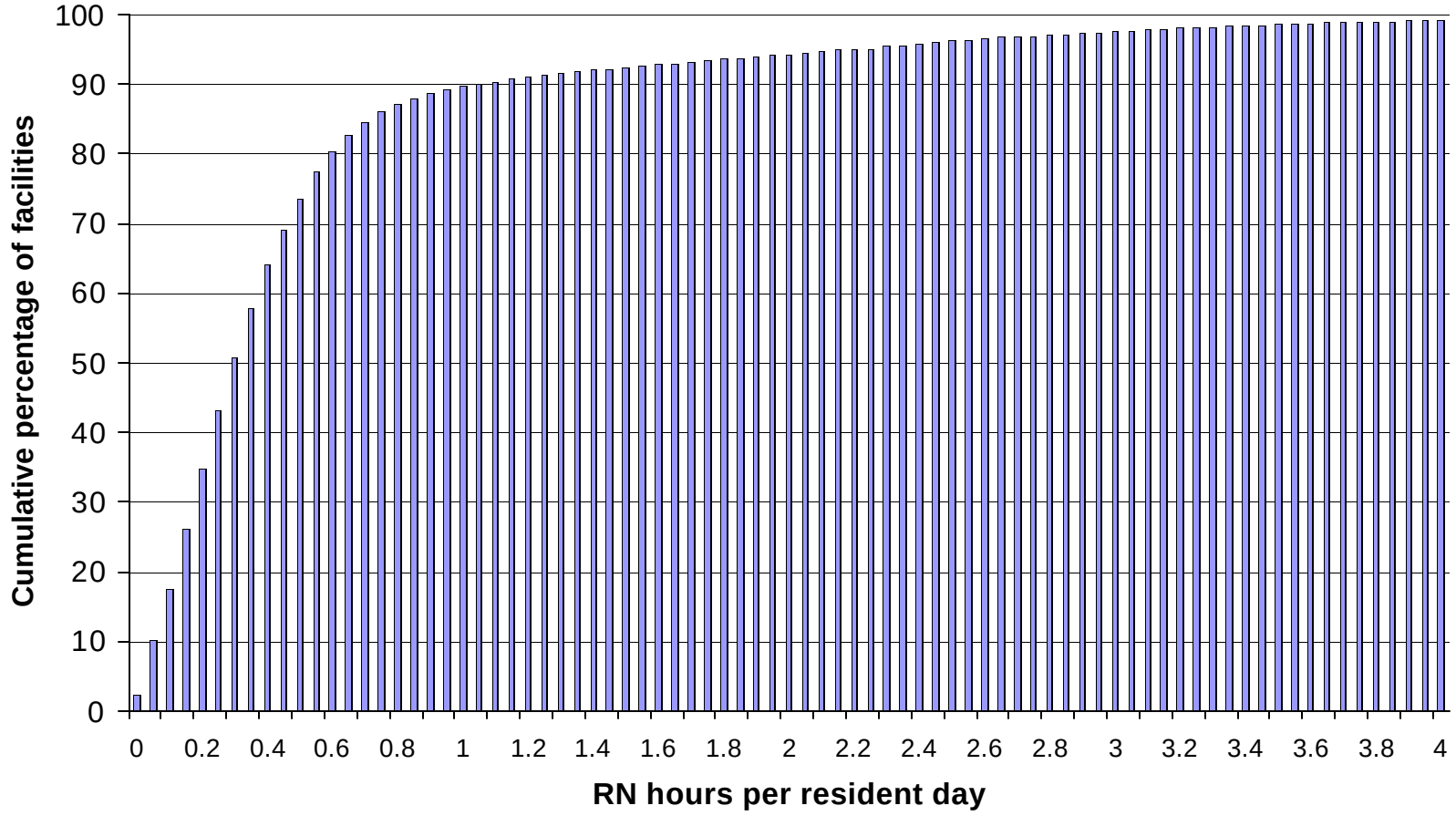
Table 3.5: Staffing Levels in U.S. Nursing Homes:
Impact of Hartford Proposal (4.55 hours per resident day), By State, 1998

State	% affected by requirement	Distribution of staffing increase required for facilities not in compliance						
		#10%	11-20%	21-30%	31-40%	41-50%	51-99%	$100%
NY	97	2	8	11	17	14	32	13
OH	89	4	5	9	13	13	40	5
OK	90	0	0	0	1	2	30	56
OR	93	4	4	5	10	12	46	12
PA	83	4	5	8	14	17	33	2
RI	96	1	9	12	7	13	29	25
SC	83	2	3	11	11	16	40	1
SD	100	0	4	6	4	14	58	15
TN	87	1	0	3	7	9	49	18
TX	87	2	2	2	3	4	42	31
UT	82	3	0	6	7	9	39	18
VA	86	3	7	3	9	9	51	4
VT	100	17	7	14	14	28	10	10
WA	86	7	15	17	13	15	16	3
WI	96	2	6	5	12	17	53	2
WV	88	5	6	2	12	12	57	0
WY	90	0	6	6	13	16	35	13

Note: The Hartford standard is 4.55 hours per resident day (see Harrington et. al., 2000)

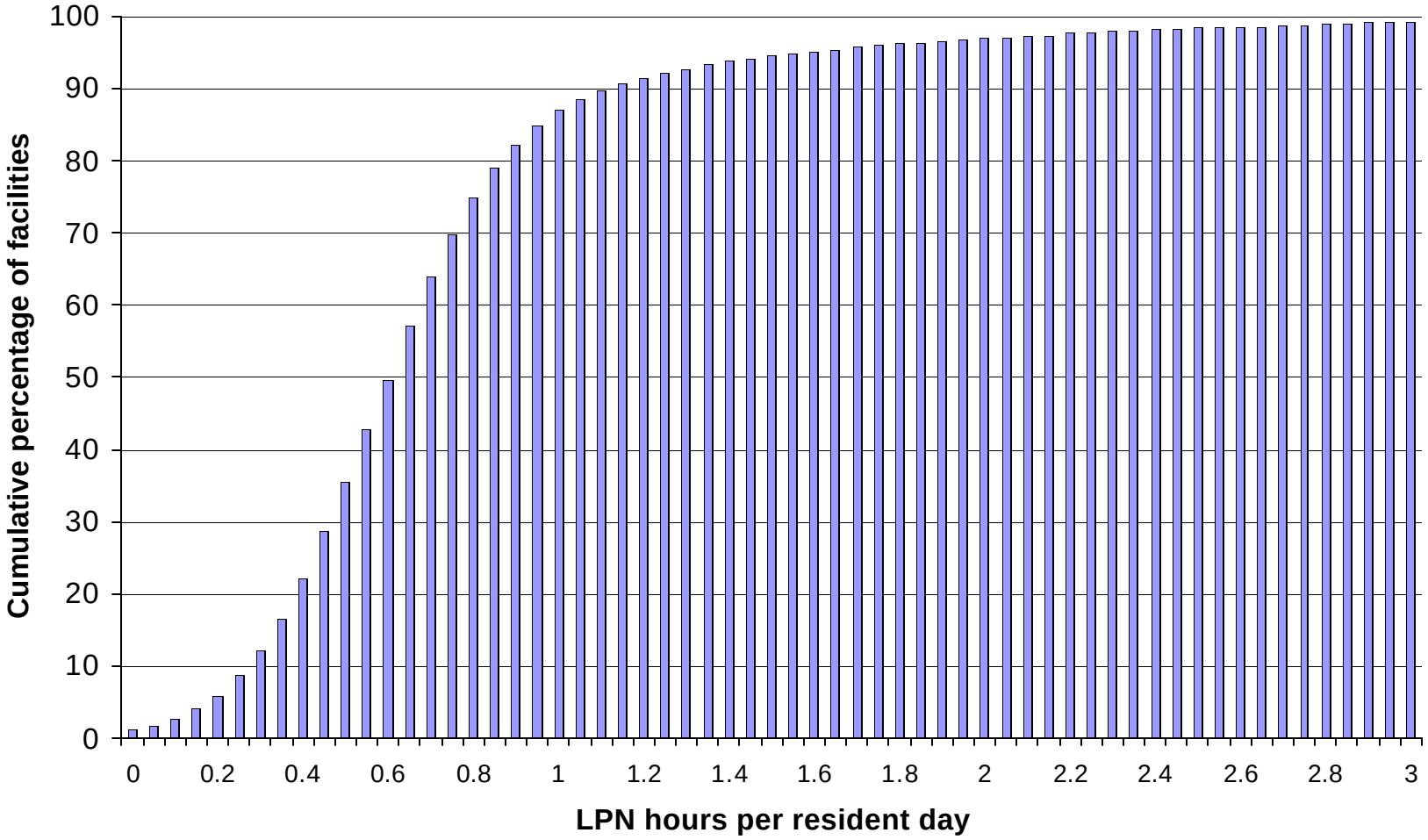
Source: OSCAR

Figure 3.16: Staffing Levels in U.S. Nursing Homes: Cumulative Distribution of RN Hours per Resident Day, 1998



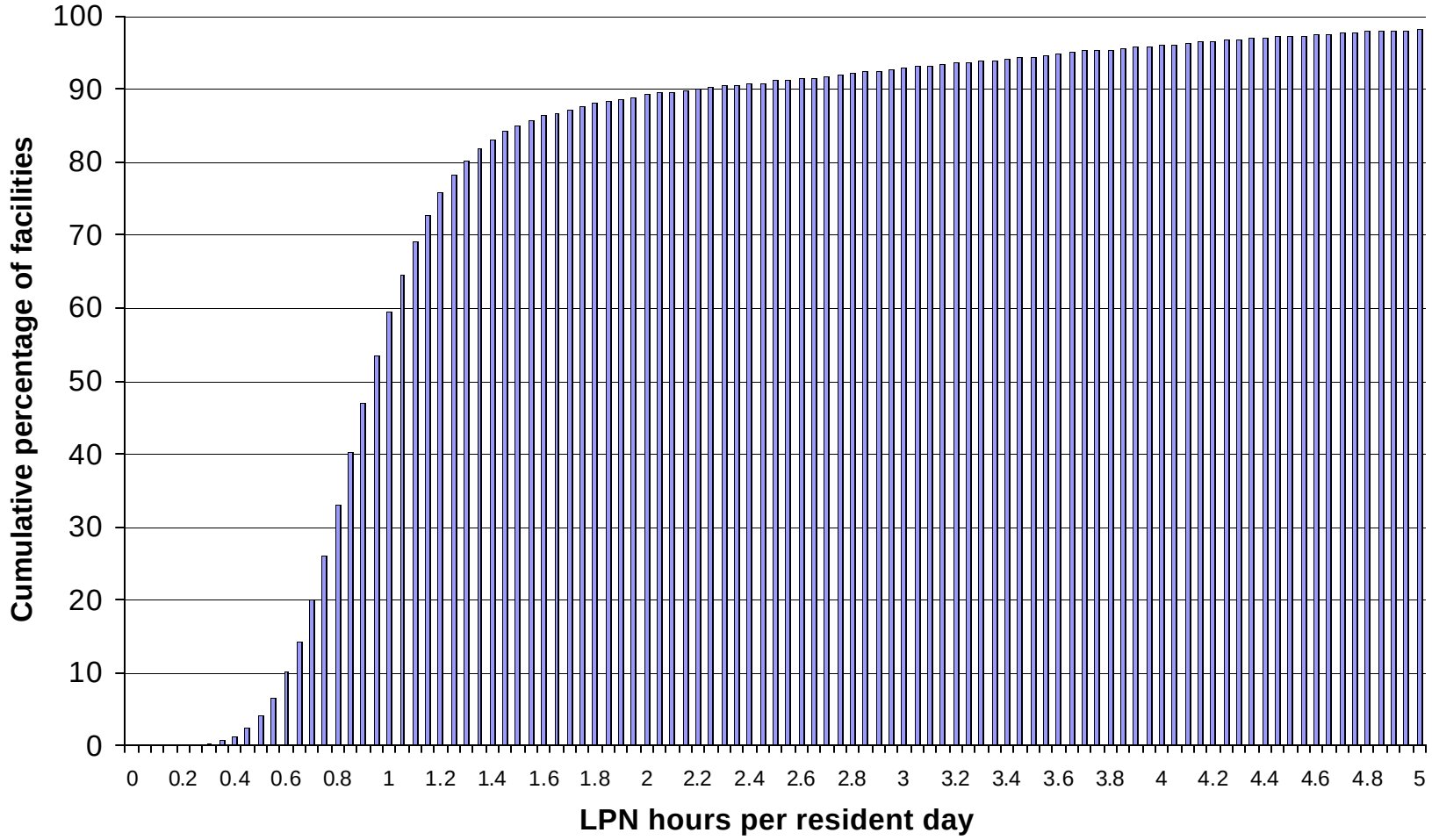
Data Source: OSCAR

Figure 3.17: Staffing Levels in U.S. Nursing Homes: Cumulative Distribution of LPN Hours per Resident Day, 1998



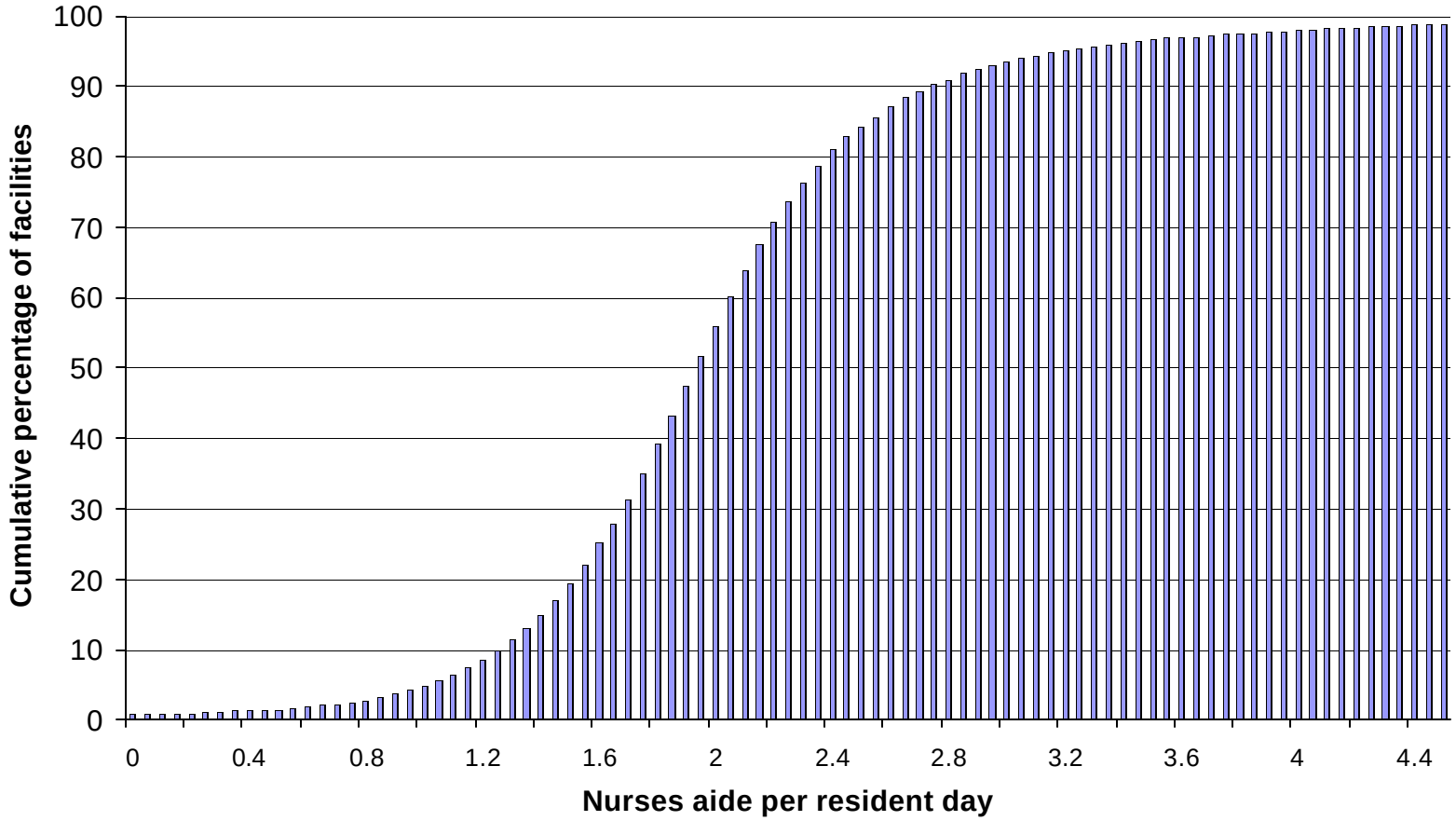
Data Source: OSCAR

Figure 3.18: Staffing Levels in U.S. Nursing Homes: Cumulative Distribution of RN+LPN Hours per Resident Day, 1998



Data Source: OSCAR

Figure 3.19: Staffing Levels in U.S. Nursing Homes: Cumulative Distribution of Nurses Aide Hours per Resident Day, 1998



Data Source: OSCAR

3.4.4.2 Analysis of the hypothesis that staffing floors become ceilings

The previous section showed the increases in staffing that would be required under one minimum staffing proposal. Another potential response to setting or raising minimum staffing requirements is that some higher staffed facilities *reduce* their staffing level. This could happen, for example, if facilities that would otherwise have higher staffing levels decrease staffing because they come to view the minimum required level as the normative standard. Absent the standard, these facilities would not have reduced their staffing levels. Any reductions in staffing that occur in response to a minimum requirement should be considered in evaluating the impact of potential staffing requirements on improved resident outcomes.

All nursing homes that are certified to receive payment under Medicare or Medicaid must meet minimum Federal nurse staffing requirements, but some States have imposed more specific requirements under their licensure authority, outlining their own provisions for nurse staffing (see Chapter 2).

3.4.4.2.1 Methodology

One way to test whether "staffing floors become staffing ceilings" is to compare the *variance* of staffing levels across States based on State staffing requirements. For this analysis, States were classified into one of three categories based on the strictness of their staffing requirement: States with no State regulation/law; those with less demanding State standards (we refer to these as 'low standard' States), and those with more demanding State standards ('high standard States'). The classification of States into these categories is described in Chapter 2.

We compared a variety of measures of the State-level distribution of staffing across the three categories of States, aggregating OSCAR data to create State-level figures. Analyses were weighted based on the number of facilities in the State. We focused on total hours and RN hours, the two categories most likely to have a mandated minimum staffing level. To determine the consistency of any patterns that were observed, this analysis included data from 1997-1999.

There is no single variable that adequately summarizes the distribution of staffing levels across the three groups of States. (Summary measures such as the standard deviation measure the overall variance, but do not identify whether any differences are due to less variance for low-staffed facilities (which must increase staffing to be in compliance in States with staffing requirements) or to less variance among high-staffed facilities (i.e., if the 'floors as ceilings' hypothesis is accurate.) We examined the a variety of measures:

- Mean staffing level

- Measures of overall variance in staffing: Standard deviation of the mean, interquartile range (difference between 25th and 75th percentile), interdecile range (difference between 10th and 90th percentile)

- Measures of variance in staffing for low-staffed facilities: Difference between 25th percentile and mean, difference between 10th percentile and mean

- Measures of variance in staffing for high-staffed facilities: Difference between 75th percentile and mean, difference between 90th percentile and mean (to test distribution of staffing for high-staffed facilities)

The analysis was intended to be purely descriptive– lacking data on the date that staffing requirements became effective and State's specific staffing requirements, we were not able to determine whether any differences in the distribution of staffing levels are due to State staffing requirements or other factors. There are three major limitations of the analyses described in this section:

- The categorization of States based on whether they have no regulation, less demanding standards, or more demanding standards was crude (see Chapter 2 for further details on this process). These standards encompass a number of factors related to staffing, and some States could easily have been placed in other categories.

- Some States may have been placed into the wrong category if there were delays between the passage of legislation related to nursing home staffing and when the legislation became effective. We did not have data on when State standards were implemented or phased-in.

- Because we did not have data on when staffing requirements became effective, we were not able to analyze how the distribution of staffing levels changed in response to changes in staffing requirements.

3.4.4.2.2 Mean staffing levels.

For all three years that we analyzed (1997-1999), mean total hours were higher in States with high staffing requirements than in the other two groups of States. In 1998, mean total hours per resident day were 3.22 in States with no requirement, 3.10 in States with a low requirement, and 3.41 in States

with the highest requirement. RN staffing levels were considerably higher in States with the highest standard than either of the other two groups (Tables 3.6 - 3.8). For 1998, mean RN hours per resident day were 0.60 in States with the highest standard, compared to 0.47 in States with some requirement and 0.45 in States with no staffing requirement.

3.4.4.2.3 Variance in staffing levels

For all three years, there was less variance in total staffing in States with some type of minimum staffing requirement than in States with no requirement, based on the standard deviation of the mean, the interquartile range and the interdecile range. Consistent with the presence of a minimum staffing level that caused some facilities to increase staffing levels, there was considerably less variance among low-staffed facilities in States with additional staffing requirements:

- For all three years, the difference in total hours between the 25th percentile and the mean was lowest for States with a high standard and highest for States with no standard (Tables 3.6 - 3.8). In 1998, for example, the difference in total hours between the 25th percentile and the mean was 0.36 in States with no requirement, 0.34 in States with a low standard, and 0.32 for States with a high standard (Table 3.7).

- Similarly, the difference in total hours between the 10th percentile and the mean was considerably smaller for States with some standard than States with no minimum staffing requirement. This difference was smaller for States with a high standard than for those with a low standard. In 1998, the difference between the 10th percentile and the mean was 0.77 for States with no requirement, 0.65 for States with a low standard, and 0.60 for States with a high standard.

- There was no consistent pattern in the variance of RN hours for low-staffed facilities (Tables 3.6 - 3.8). The difference between either the 10th or 25th percentile and mean RN hours was consistently lower for States with a low standard than for States with no standard. Across all three years, however, these differences were largest in States with a high standard.

Some of the measures of variance in total staffing for high-staffed facilities suggested less variance in staffing among high-staffed facilities in States with some type of staffing requirement, consistent with the 'staffing floors as staffing ceilings' hypothesis, although the evidence was mixed. Among high staffed facilities, there was consistently greater variance in RN hours for States with high staffing requirements.

- For all three years, the difference between the 75th percentile and mean total hours was smallest in States with a low standard, but was also lower for States with a high standard than for facilities in States with no requirement. In 1998, this difference was 0.56 for facilities with no requirement, 0.46 for States with a low standard, and 0.53 for States with a high standard.

- Among very high staffed facilities, there was little evidence in support of the floors-as-ceilings hypothesis, and an inconsistent relationship between variance in total hours and State staffing requirements. In 1997, the difference between the 90th percentile and mean total hours was smallest in States with no staffing requirement. In 1998 and 1999 this difference was smaller in States with a low standard than in States with no requirement, but was highest in States with a high standard.

The variance in RN hours, across both the low and high ends of the distribution, was highest for States with the highest staffing requirements and lowest for States with a low standard. This suggests that State staffing requirements had little impact on the distribution of RN hours, although the larger variance in States with the highest standard may be related to the higher levels of RN staffing in those States. It may also be that States staffing requirements tended not to specify minimum RN levels.

- In 1998, the interquartile range (difference between the 25th and 75th percentiles) was 0.28 in States with no requirement, 0.26 in states with a low standard, and 0.35 in states with a high standard. A similar pattern was observed for 1997 and 1999.

- The difference between mean RN hours and the 25th percentile was consistently smallest for states with a low requirement and largest for states with a high standard. In 1999, for example, the difference between the mean RN hours and the 25th percentile was 0.11 for states with no requirement, 0.1 for states with a low standard, and 0.13 for states with a high standard.

- There was a similar pattern among facilities with high levels of RN staffing. The variance in RN staffing was highest in states with a high staffing requirement and lowest for states with a low standard.

Mean staffing levels were higher for states with more demanding standards, and, among low staffed facilities, the variance in staffing was lower for facilities in states with state standards. Both of these were anticipated effects of minimum staffing requirements. The evidence was mixed and inconclusive as to whether minimum staffing requirements reduce the variance in staffing for higher staffed facilities.

The analyses in this section were intended to be purely descriptive, and we did not attempt to examine other potential sources of state-level differences in the distribution of staffing levels, such as differences in resident case mix, Medicaid reimbursement levels, or heterogeneity in staffing practices (e.g., differences in the use of non-nursing staff) across states in the three groups. We did not have data on the specific staffing requirements of states (other than their grouping into the three categories that we used), so we could not examine the variance in staffing levels around some specified level. Future research should also examine the changes in the distribution of staffing levels for states that recently enacted (or changed) staffing requirements.

Table 3.6: Staffing Levels in U.S. Nursing Homes: Distribution of Total Hours per Resident Day, Based on Type of Staffing Requirement in State, 1997

Measure	Type of staffing requirement in State		
	No State Regulation/Law*	**Less Demanding State Standards****	**More Demanding State Standards*****
Total hours per resident day			
Mean total	3.19	3.09	3.39
Standard deviation of the mean	0.095	0.072	0.067
Interquartile range (difference between 25th and 75th percentiles)	0.933	0.813	0.827
Interdecile range (10th and 90th percentiles)	2.63	2.51	2.60
Difference between 25th percentile and mean	0.375	0.333	0.319
Difference between 10th percentile and mean	0.795	0.645	0.596
Difference between 75th percentile and mean	0.558	0.479	0.508
Difference between 90th percentile and mean	1.837	1.869	2.006
RN hours per resident day			
Mean total	0.457	0.463	0.589
Standard deviation of the mean	0.042	0.035	0.035
Interquartile range (difference between 25th and 75th percentiles)	0.291	0.262	0.341
Interdecile range (10th and 90th percentiles)	0.898	0.873	1.167
Difference between 25th percentile and mean	0.108	0.096	0.127
Difference between 10th percentile and mean	0.179	0.164	0.215
Difference between 75th percentile and mean	0.183	0.166	0.215
Difference between 90th percentile and mean	0.719	0.710	0.95

Note: Figures weighted based on number of facilities in State.

* These States do not specify any additional nurse staffing requirements to the Federal standard.

** These States have specified nurse staffing requirements through law and/or regulation, in addition to the Federal requirement. See the following note.

*** States categorized in this column require more than 2.25 hprd or more than 1 staff member to 9 residents in the day shift, 13 residents in the evening shift, and 22 residents in the night shift.

(See Chapter 2 for further details on how States were classified into these three groups)

Source: OSCAR

Table 3.7: Staffing Levels in U.S. Nursing Homes: Distribution of Total Hours per Resident Day, Based on Type of Staffing Requirement in State, 1998

Measure	Type of staffing requirement in State		
	No State Regulation/Law*	**Less Demanding State Standards****	**More Demanding State Standards *** **
Total hours per resident day			
Mean total	3.22	3.10	3.41
Standard deviation of the mean	0.091	0.074	0.069
Interquartile range (difference between 25th and 75th percentiles)	0.919	0.804	0.852
Interdecile range (10th and 90th percentiles)	2.722	2.478	2.67
Difference between 25th percentile and mean	0.360	0.340	0.323
Difference between 10th percentile and mean	0.768	0.653	0.597
Difference between 75th percentile and mean	0.560	0.464	0.528
Difference between 90th percentile and mean	1.953	1.824	2.071
RN hours per resident day			
Mean total	0.453	0.472	0.603
Standard deviation of the mean	0.039	0.038	0.038
Interquartile range (difference between 25th and 75th percentiles)	0.282	0.256	0.353
Interdecile range (10th and 90th percentiles)	0.902	0.810	1.253
Difference between 25th percentile and mean	0.107	0.099	0.132
Difference between 10th percentile and mean	0.185	0.164	0.221
Difference between 75th percentile and mean	0.174	0.157	0.221
Difference between 90th percentile and mean	0.717	0.646	1.032

Note: Figures weighted based on number of facilities in State.

* These States do not specify any additional nurse staffing requirements to the Federal standard.

** These States have specified nurse staffing requirements through law and/or regulation, in addition to the Federal requirement. See the following note.

*** States categorized in this column require more than 2.25 hprd or more than 1 staff member to 9 residents in the day shift, 13 residents in the evening shift, and 22 residents in the night shift.

(See Chapter 2 for further details on how States were classified into these three groups)

Source: OSCAR

Table 3.8: Staffing Levels in U.S. Nursing Homes: Distribution of Total Hours per Resident Day, Based on Type of Staffing Requirement in State, 1999

Measure	Type of staffing requirement in State		
	No State Regulation/Law*	**Less Demanding State Standards****	**More Demanding State Standards*****
Total hours per resident day			
Mean total	3.218	3.07	3.37
Standard deviation of the mean	0.122	0.098	0.090
Interquartile range (difference between 25th and 75th percentiles)	0.909	0.813	0.846
Interdecile range (10th and 90th percentiles)	2.613	2.383	2.587
Difference between 25th percentile and mean	0.374	0.351	0.335
Difference between 10th percentile and mean	0.796	0.677	0.600
Difference between 75th percentile and mean	0.534	0.463	0.512
Difference between 90th percentile and mean	1.817	1.706	1.987
RN hours per resident day			
Mean total	0.458	0.454	0.587
Standard deviation of the mean	0.053	0.049	0.049
Interquartile range (difference between 25th and 75th percentiles)	0.292	0.253	0.337
Interdecile range (10th and 90th percentiles)	0.848	0.717	1.120
Difference between 25th percentile and mean	0.111	0.099	0.131
Difference between 10th percentile and mean	0.194	0.154	0.221
Difference between 75th percentile and mean	0.181	0.171	0.207
Difference between 90th percentile and mean	0.655	0.546	0.899

Note: Figures weighted based on number of facilities in State.

* These States do not specify any additional nurse staffing requirements to the Federal standard.

** These States have specified nurse staffing requirements through law and/or regulation, in addition to the Federal requirement. See the following note.

*** States categorized in this column require more than 2.25 hprd or more than 1 staff member to 9 residents in the day shift, 13 residents in the evening shift, and 22 residents in the night shift.

(See Chapter 2 for further details on how States were classified into these three groups)

Source: OSCAR

3.4.4.2.4 Comparison of staffing levels for large nursing home chains to other facilities

Recently, many large chains have struggled financially, possibly due to changes in reimbursement that were implemented as part of the Balanced Budget Act of 1997. These facilities may attempt to contain costs by reducing staff levels or substituting some care provided by RNs to less expensive staff such as nurses aides. We compared changes in staffing levels for three groups of facilities: those associated with one of four large chains that filed for Chapter 11 bankruptcy protection in 1999 or 2000 (Sun Healthcare, Vencor, Integrated Health Services, Mariner Post-Acute Services), those associated with other large chains (Beverly Enterprises, Genesis Health Ventures, Complete Healthcare, Extendicare, HCR Manorcare, Lifecare Centers of America), and all other facilities (for simplicity, we refer to this group as non-chains even though it includes many smaller chains; also for simplicity, we refer to the first group which has filed for bankrupsy protection as "bankrupt chains").

Facilities were placed into one of these three categories based on a list of provider numbers compiled by a HCFA contractor. This list reflects chain affiliation as of October 1999, a limitation of this analysis given the fluctuation in chain designation across time. If this measurement error tends to be distributed randomly, it will tend to bias the regression coefficients associated with chain status towards zero.

Change in staffing over time. We analyzed total staffing, by quarter, for the three groups of facilities from 1996-1999. Because each facility has only one OSCAR assessment each year, the composition of facilities is different for each quarter. Figures for the first quarter of 1997, for example, are based on all facilities that completed OSCAR assessments between January and March or 1997. Figures for the second quarter were based on a completely different sample of facilities– those for which OSCAR assessments were completed between April and June 1997.

Between 1996-1999, total hours per resident day were consistently higher for non-chains than for either group of chains (Figure 3.19). Beginning with the first quarter of 1997, staffing levels for the large chains that did not ultimately declare bankruptcy were somewhat higher than for the bankrupt chains, although the differences were very small in 1998 and in the first two quarters of 1999 (the only 1999 data available for this study).

There was some evidence that staffing trends were different for large chains (including bankrupt chains) than for other facilities. Staffing levels for non-chains increased in 1997 and 1998. Total hours per resident day increased from 3.16 to 3.3 between the first quarter of 1996 and the last quarter of 1997. Total hours for (non-bankrupt) large chains decreased from 3.04 to 2.90 between the first quarters of

1997 and 1998, and to 2.81 by the second quarter of 1999. Staffing levels for facilities associated with bankrupt chains decreased somewhat in both quarters of 1999.

The pattern for RN staffing levels was similar to that of total hours. RN hours were considerably higher for non-chains than either of the two chain groups (Figure 3.21). While RN hours increased from 1996-1998 for non-chains, the level of RNs was stable for bankrupt chains and decreased somewhat for other large chains.

3.4.4.2.5 Regression analysis of changes in staffing levels

We estimated a series of regression models to capture differences in how staffing levels changed across time for the three groups of facilities. The independent variables in the regression models included the lagged dependent variable (i.e., the staffing measure for the previous year), the total number of residents (to capture potential economies of scale), the proportion of Medicare residents, an indicator for whether the facility is hospital-based, and indicators for whether the facility is part of a bankrupt chain or affiliated with another large chain. Because the model included staffing measures from the previous period, the chain affiliation variable measures the *change* in staffing for bankrupt and other large chains relative to the omitted category, non-chains.

For both 1998 and 1999, facilities associated with large chains (including bankrupt chains) reduced total hours and RN hours relative to non-chains. The 1999 change in total hours was larger for bankrupt chains than for other chains. The decrease in staffing, while not large in magnitude, was statistically significant.

- In 1998, total hours decreased by 2.3% for facilities affiliated with bankrupt chains and 2.8% for other large chains, relative to non-chains (Table 3.9). Both changes were statistically significant.

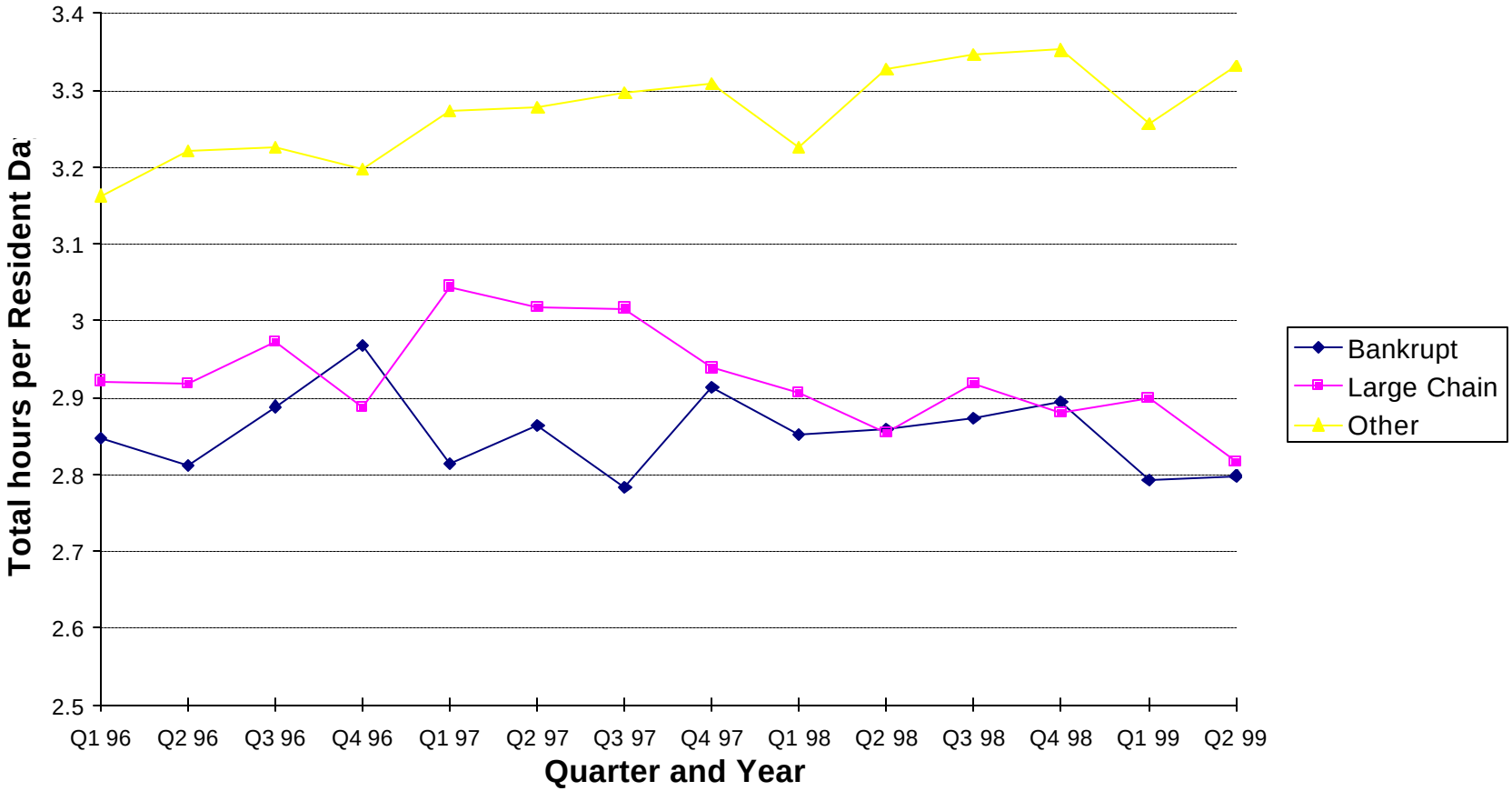
- Through the first two quarters of 1999, total hours for facilities associated with bankrupt chains decreased by 3.6% relative to non-chains. This difference was statistically significant at the 1% level. The change in staffing for other large chains was not significantly different than that of non-chains.

- In both 1998 and 1999, there were decreases in RN hours for both bankrupt chains and other large chains, relative to non-chains. In 1998, RN hours decreased by about 4% for facilities affiliated with bankrupt chains and decreased by a similar amount for other large chains (although the coefficient for other large chains was not statistically

significant) (Table 3.10). The decrease in RN staffing for 1999 was somewhat larger than in 1998. Relative to the change in staffing for non-chain facilities, RN hours decreased by about 5% for facilities affiliated with either a large chain or a bankrupt chain. Both coefficients were significant at the 10% level.

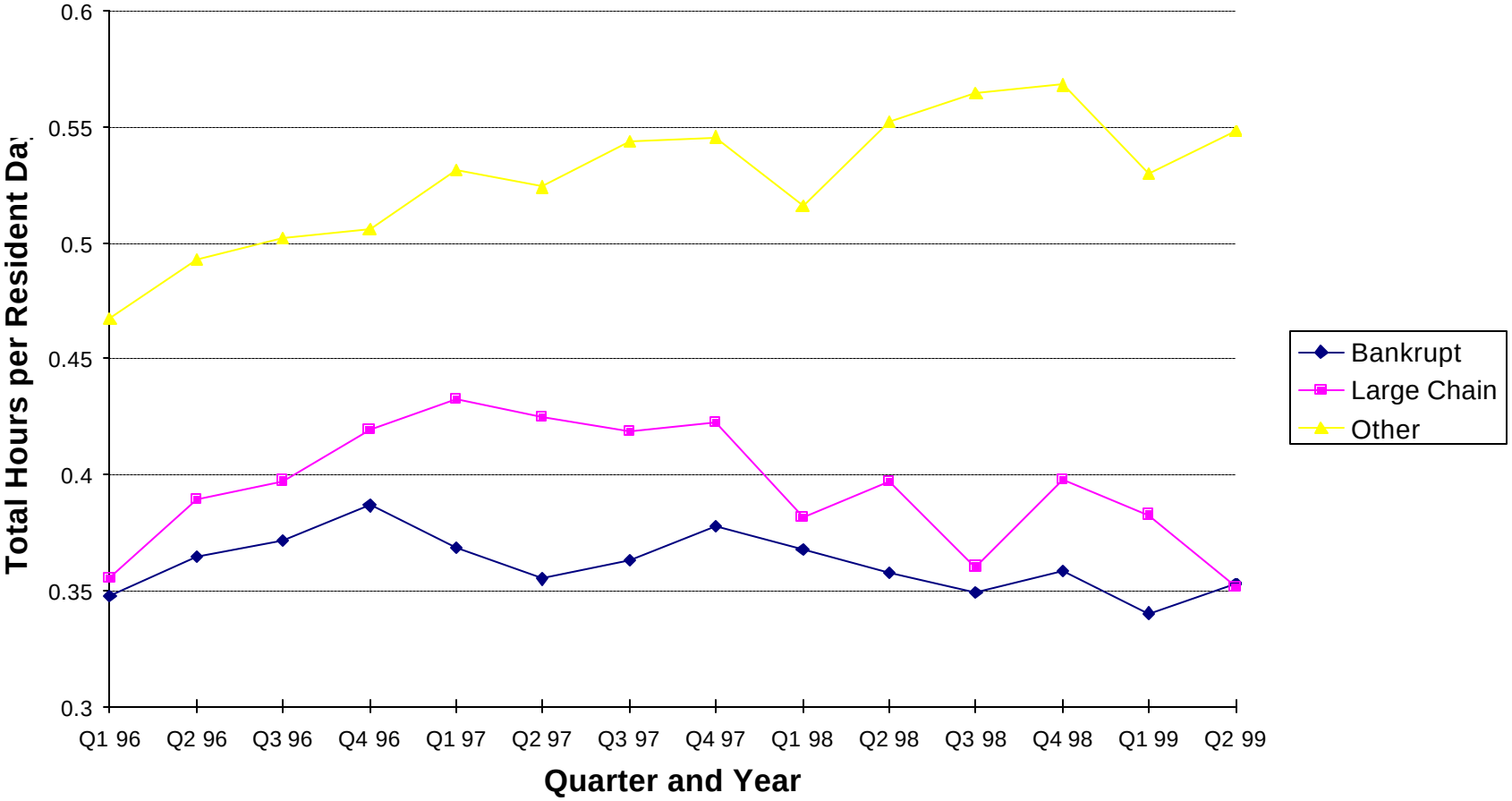
While the regression models do not permit one to analyze the cause of reductions in total and RN hours that were observed for facilities associated with large chains, particularly bankrupt chains, these findings are consistent with these facilities using staff cutbacks as one way to reduce costs. The fact that the regression coefficients for the bankrupt chain indicator was consistently negative and significant, particularly in light of the error with which chain status was measured, suggests that there were important differences in staffing patterns for these facilities in 1998 and the first two quarters of 1999. This analysis should be repeated using data from the last two quarters of 1999 when these data become available. Given the relationship between staffing and outcomes described in Chapters 9-12 and 14, these findings suggested that the recent financial difficulties experienced by the long-term care industry may have quality-of-care implications.

Figure 3.20: Total Hours per Resident Day for Bankrupt Chains, Other Large Chains, and Other Facilities, 1998



Note that quarterly figures are based on facilities that completed OSCAR assessments during the indicated quarter.
Data Source: OSCAR

Figure 3.21: RN Hours per Resident Day for Bankrupt Chains, Other Large Chains, and Other Facilities, 1998



Note that quarterly figures are based on facilities that completed OSCAR assessments during the indicated quarter.

Table 3.9:
Staffing Levels in U.S. Nursing Homes: Multi-variate Analysis of Total Hours per Resident Day, 1998 and 1999

Variable	1998 Total hours per resident day		1999 Total hours per resident day	
	Parameter estimate (standard error)	% impact at mean	Parameter estimate (standard error)	% impact at mean
Intercept	0.852*** (0.024)	---	0.764*** (0.034)	---
Total hours per resident day in previous year	0.700*** (0.007)	+21.8%	0.723*** (0.010)	+22.7%
Total residents	-0.0003** (0.0001)	-0.1%	-0.0002 (0.0001)	-0.1%
Percentage of Medicare residents	0.869*** (0.046)	+27.1%	0.871*** (0.065)	+27.3%
Facility is hospital-based	0.336*** (0.027)	+10.5%	0.301*** (0.039)	+9.4%
Facility is part of a bankrupt chain	-0.074*** (0.026)	-2.3%	-0.114*** (0.036)	-3.6%
Facility is part of a large nursing home chain (excluding bankrupt chains)	-0.089*** (0.025)	-2.8%	-0.049 (0.035)	-1.5%
Mean of dependent variable	3.21		3.19	
R-squared	0.746		0.758	

***: Coefficient is statistically significant at the 1 percent level.
** : Coefficient is statistically significant at the 5 percent level.
N= 10,360 for 1998, 4,986 for 1999.
Source: OSCAR

Table 3.10:
Staffing Levels in U.S. Nursing Homes: Multi-variate Analysis of RN Hours per Resident Day, 1998 and 1999

Variable	1998 Total hours per resident day		1999 Total hours per resident day	
	Parameter estimate (standard error)	% impact at mean	Parameter estimate (standard error)	% impact at mean
Intercept	0.071*** (0.007)	---	0.065*** (0.009)	---
Total hours per resident day in previous year	0.740*** (0.007)	+146.0%	0.749*** (0.010)	+149.2%
Total residents	-0.0002*** (0.00005)	-0.04%	-0.0002** (0.000)	+4.0%
Percentage of Medicare residents	0.523*** (0.022)	+103.1%	0.541*** (0.031)	+107.8%
Facility is hospital-based	0.139*** (0.012)	+27.4%	0.118*** (0.017)	+23.5%
Facility is part of a bankrupt chain	-0.020* (0.001)	-3.9%	-0.027* (0.016)	-5.4%
Facility is part of a large nursing home chain (excluding bankrupt chains)	-0.021* (0.011)	-4.1%	-0.026* (0.015)	-5.2%
Mean of dependent variable	0.507		0.502	
R-squared	0.811		0.824	

***: Coefficient is statistically significant at the 1 percent level.
** : Coefficient is statistically significant at the 5 percent level.
N= 10,360 for 1998, 4,986 for 1999.
Source: OSCAR

3.5 Conclusion

This background chapter has provided an updated portrait of nursing home staffing. The first section presented a very general overview of how nursing home nurse staffing in other countries compares to the U.S. The reported U.S. staffing levels in this overview are from published literature and there is no attempt to assess the adequacy of the data sources utilized and possibly fine more accurate alternatives. Although different definitions and data collection preclude making very precise comparisons, it was found that a pattern emerges with respect to *relative* differences: nursing homes in the U.S. staff at much lower levels than in the other countries. In addition, the distribution of nursing hours in other countries is toward higher skilled staff (e.g., registered nurses) than is typically found in the U.S. where about 60% of total nursing hours are provided by the least skilled staff (i.e., nurse aides).

The second section focused exclusively on the U.S. and an assessment of the three data sources that collect uniform data and can provide national estimates of staffing in the U.S.: 1996 Nursing Home Component (NHC) of the Medical Expenditure Panel Survey (MEPS); 1997 National Nursing Home Survey (NNHS); HCFA's On-Line Survey, Certification and Reporting (OSCAR) System. All three of the nurse staffing data sources use slightly different definitions of nursing homes, different data collection procedures, different reference periods, and collect different data on nursing home staff. They also use different definitions for resident counts - a difference which impacts the key variable in this entire study, the number of hours (or FTEs) *per resident day*. Most importantly, none of the staffing data provided are independently validated against another source such as payroll records.

However, the OSCAR data provide a very important advantage over the other two national data sources. The OSCAR data are essentially an ongoing census of the 95% of nursing homes that are certified. As such, State-level staffing estimates can be generated. These State-level estimates are not possible with the sample surveys of the MEPS and the NNHS. Hence, we have employed the OSCAR data for the analysis of current levels and trends of nurse staffing in U.S. nursing homes and have used these data to examined three policy related issues in light of these staffing levels. We have recognized, however, the limitations of the OSCAR data. In Chapter 7 we have assessed validity of the OSCAR data and have developed a number of decision rules for arraying the data which improves its reliability. Applying these decisions rules permits the construction of an improved, more accurate OSCAR file that were employed in the analysis presented in this chapter.

Mean staffing levels were relatively constant between 1996 and 1999, and were virtually unchanged between 1997 and 1999. Hospital-based facilities had much higher staffing levels

than freestanding facilities, and staffing was much higher for non-profit and government facilities than for-profit facilities. The distribution of total hours was close to a normal (i.e., bell-shaped) distribution, with a long tail reflecting the small number of facilities with very high staffing levels.

We analyzed the proportion of facilities that would be affected by the 4.55 minimum total hours per resident day recommended by the Hartford Conference, a recommendation that built upon a prior standard recommended by the National Citizens Coalition for Nursing Home Reform (NCCNHR). The Hartford proposal would require most facilities to increase staffing levels. Only about 11% of facilities had more than 4.55 total hours in 1998, and many facilities would have to increase staffing by 50% of more to be in compliance with these proposed requirement. Some facilities would have to more than double staffing.

The intent of minimum staffing regulatory requirements is to raise the nurse staffing floor and thereby raise the general level of staffing. That objective appears to have succeeded. We compared a variety of measures of the State-level distribution of staffing across three groups of States– those with no requirement, those with a less demanding standard, and those with the most demanding standard. Mean staffing levels were found to be higher for States with more demanding standards, and, among low staffed facilities, the variance was lower for facilities in States with State standards. However, it is possible that some facilities with high staffing levels reduce staffing in response to a minimum requirement. The evidence was mixed and inconclusive as to whether minimum staffing requirements reduce the variance in staffing for higher staffed facilities. Further research is needed to test the extent to which staffing floors become ceilings.

Many large nursing home chains have experienced financial difficulties in the past few years, and there is concern that facilities associated with these chains may reduce staffing levels as part of efforts to control costs. For both 1998 and 1999, total nursing hours for both bankrupt chains and other large chains decreased relative to other facilities. Relative to other facilities, total nursing hours for facilities associated with bankrupt chains decreased by 2% for 1998 and 3.5% in 1999. While it was not possible to investigate the cause of these reductions, these findings suggest that the recent financial difficulties of the long-term care industry may have quality-of-care implications, especially when considered in light of the relationships between staffing and outcomes described in Chapters 9 through 12 and 14.

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